LIBRARY A. B. C. F. M.

SEPTEMBER, 1898. VOL. XII. NO. 3.

The Geographical Journal

INCLUDING THE PROCEEDINGS OF THE ROYAL GEOGRAPHICAL SOCIETY.

SUMMARY OF CONTENTS.

(For Details, see over.)

	PAGE
The Yangtse Chiang. By W. R. CARLES, H.B.M. Consul at Swatau	225
Circumnavigation of Lake Bangweolo. By POULETT WEATHERLEY	241
Through Tibet to China. By Captain M. S. WELLBY, 18th Hussars	262
A Visit to Karaginski Island, Kamchatka. By G. E. H. BARRETT-HAMILTON and H. O. JONES	280
African Books of 1897–98. By EDWARD HEAWOOD, M.A.	300
The Old Beds of the Amu-Daria. By P. KROPOTKIN	306
The Monthly Record	310
Geographical Literature of the Month	320
New Maps	332
Maps and Illustrations.	

PUBLISHED UNDER THE AUTHORITY OF THE COUNCIL.
EDITED BY THE SECRETARY.

LONDON:
THE ROYAL GEOGRAPHICAL SOCIETY, 1, SAVILE ROW;
EDWARD STANFORD, 26 AND 27, COCKSPUR STREET, CHARING CROSS, S.W.

PUBLISHED MONTHLY.] [To Non-Fellows, Price 2s.

For Notices as to the Society's Meetings and other important matters, see p. iv.

H. SOTHERAN & CO.,

Booksellers, Bookbinders & Publishers.

GENERAL AGENTS FOR PRIVATE BOOKBUYERS & PUBLIC INSTITUTIONS

In India, the Colonies, America, and foreign parts.

A MONTHLY CATALOGUE of SECOND-HAND BOOKS: Specimen No. post free.

LIBRARIES PURCHASED OR VALUED FOR PROBATE.

Telegraphic Address: BOOKMEN, LONDON. Code in Use: UNICODE.

140, STRAND, W.C., & 37, PICCADILLY, W.

THE STANDARD LIFE ASSURANCE CO.

A Life Office of 72 years' standing, and one of the wealthiest and most progressive of the Provident Institutions of the United Kingdom.

FUNDS - - - - - - £8,400,000.

ANNUAL REVENUE - OVER £1,000,000.

THE STANDARD, owing to its world-wide connection, has established an Agency organization throughout the world second to that of no other Office, and thus affords exceptional facilities to persons travelling or living in any part of the Globe. The Company has Secretaries and Local Boards of Directors at the following places abroad:—

CANADA. WEST INDIES. BOMBAY. CHINA. MAURITIUS.
SOUTH AMERICA. CALCUTTA. CEYLON. SOUTH AFRICA. SCANDINAVIA.

And Agents in all the chief towns of the Empire.

PREMIUMS MODERATE. *CONDITIONS LIBERAL.*

EDINBURGH (Head Office): 3, GEORGE STREET.

LONDON: 83, KING WILLIAM STREET; and 3, PALL MALL EAST (West End Office).

Where all particulars can be obtained.

THE TRAVELLER'S WATCH.

THIS WATCH HAS BEEN SUPPLIED TO MEMBERS OF THE ROYAL GEOGRAPHICAL SOCIETY.

BENSON'S SPECIAL STRENGTH "FIELD" WATCH.

In massive 18-ct. Gold Cases, £35. In Silver Cases, £21.

Best London make; Half-Chronometer movement; pivoted on rubies and diamonds; strong and safe Keyless work; fine Chronometer Balance; Breguet Balance Spring.

As a high-class, strictly accurate, and reliable Watch, it is unsurpassed for Explorers, Travellers, and Officers on Foreign Service.

In extra strong close-fitting Cases, Hunting, Half-Hunting or crystal-glass, engine-turned or polished, 18-ct. gold, £35; or silver, £21.

Sent to any part of the World on receipt of drafts (postage and insurance paid by us).
Illustrated Book of Watches, Chronometers, Chronographs, Clocks, and Jewellery sent post free.

J. W. BENSON, LTD., Steam Factory: 62 & 64, Ludgate Hill, E.C.

AND AT 28, ROYAL EXCHANGE, E.C., AND 25, OLD BOND STREET, LONDON, W.

The
Geographical Journal.

No. 3. SEPTEMBER, 1898. Vol. XII.

THE YANGTSE CHIANG.*

By W. R. CARLES, H.B.M. Consul at Swatau.

The great river of China which foreigners call the Yangtse Chiang, has its sources on the south-east edge of the great steppes which form Central Asia. Rising almost due north of Calcutta, it flows eastward for some 500 miles, draining a very considerable area on its way, and then turns southwards until it is penned in by the great parallel ranges which until recent years have hidden it and its great neighbours from European eyes. Even after entering China its course has remained obscure, and the deep rift through which it makes its way to the navigable portion of its waters in Sze Chuen is, save here and there, still unexplored. In the eastern half of Sze Chuen it receives the drainage of another large area, before entering the country commonly known as the Ichang Gorges, and on leaving the Gorges its arms spread north and south from the Yellow river to the Canton province, affording easily navigable routes through the heart of China, and by the Grand canal to Tientsin.

One of the largest rivers in the world, its importance to China as a waterway in some of the wealthiest and most thickly populated provinces of the empire completely overshadows all the other river-systems of the country.

The actual length of the Yangtse Chiang is at present unknown. The navigable portion, *i.e.* to Ping-shan Hsien, is 1550 miles. West of Ping-shan Hsien the river attains its extreme southern and northern limits; but from a careful measurement made for me of the best maps owned by

* The system of spelling Chinese names in this paper is in accordance with the rules of the Royal Geographical Society, and it is only fair to the author to state that he prefers the system introduced by Sir Thomas Wade. Map, p. 336.

the Royal Geographical Society, its entire length is not much more than 3000 miles.

The estimate made* by Dr. H. B. Guppy, R.N., of the probable discharge of the river, places the discharge of water into the Yellow sea at 770,000 cubic feet per second, and the total amount of suspended material carried to the sea every year at 6,428,858,255 cubic feet. Hankau, where Dr. Guppy collected his data for forming this estimate, is not so perfect a position as might be found lower down the river, *e.g.* at Chinkiang, for a large portion of the annual floods at Hankau finds its way across the plain to the river far below the city. The area of drainage is probably between 650,000 and 700,000 square miles.

Of the meaning of the name Yangtse Chiang more than enough has been written. The name is derived from one of the ancient Divisions of China near the coast, and is applied by Chinese only to the tidal portion of the river. Popular as is its name of "Son of the Ocean," there is no good authority for its use. The name in common use by the French, "Le Fleuve Bleu," is very difficult of explanation. The only explanation of which I know is that in Réclus' 'Géographie Universelle': "Ses eaux sont jaunes d'alluvions comme celles du Hoang-ho; mais tandis que ce dernier fleuve est comparé à la terre, 'au principe femelle' dont la couleur symbolique est le jaune, le Yangtze serait, d'après quelques commentateurs, le Fils du Principe mâle, c'est à dire du ciel; par conséquent le nom de Fleuve Bleu, que lui donnent les anciens missionaires et qui est encore trés usité en Europe se trouverait justifié, puisque l'azur est la couleur du ciel." But there must be some simpler explanation, and one resting on a more solid foundation.

For the purpose of the present paper, I have treated the whole river as though the name Yangtse Chiang were applicable to it, as that is the name by which it is best known to Europeans, but to Chinese it is the River, the Great River, or the Long River, and the names applied to it locally are almost unknown except to geographers.

In the following notes I have attempted to throw together some of the additions made to our knowledge in the last fifty years of the main river and its tributaries, and to give some idea of how large a mass of China is comprised in the "Yangtse Chiang valley." As I have no library at hand to refer to,† there are necessarily imperfections in the paper, for which I would ask indulgence.

"The most remarkable journeys ever made by a European in Tibet were achieved by a Dutchman, who went from India, by Lhasa, to Peking, and returned by the same route.

"This traveller was Samuel Van de Putte. . . . Father Horace della Penna, in one of his letters, quotes a passage from the journal of Van de

* N.C. Branch of R.A.S., 1881, pp. 5, 6.

† The paper was written at Fuchau.

Patte, in which he describes the passage of the river Biciu (Bi-tsiou), the upper course of the Yangtse Chiang: 'The river is so large that, to cross it in boats of skin, he embarked in the morning and landed on an island in the evening, and could not complete the passage across till the middle of the following day.'" *

This was between 1723 and 1736, and the place where this remarkable traveller crossed the river was probably in about lat. 34°, long. 94°, about 2500 miles from its mouth. Little more was learnt by European travellers of the higher waters of the Yangtse Chiang until, in 1845, Pères Huc and Gabet crossed it, probably near the same place. The difficulties of the passage had been smoothed for them by winter, but they also had a remarkable experience.

"We had previously, from our encampment (on the bank of the river), observed dark shapeless masses ranged across this great river; and it was not until we came quite close to these fantastic islets that we could at all make head or tail of them. Then we found out that they were neither more nor less than upwards of fifty wild cattle absolutely encrusted in the ice, . . . which was so transparent as to give a full view of the form and position of the unlucky animals, which looked as though they were still swimming." †

On their return journey these travellers recrossed the river at a point much lower down ‡ on their way from Chiamdo to Ta-chien-lu, near where Mr. T. T. Cooper crossed the river in 1868.

It was in 1873 that the first scientific explorer, Colonel Prjevalsky, struck the river in lat. 34° 43′, long. 94° 48′, and 13,143 feet above the sea. He found it impassable, and writes of it as a rapid torrent fordable in autumn after the floods have gone down, but only in a few places, with an average depth of 5 to 7 feet, and a width, at the spot where he saw it, near the confluence of the Murui-usu with the Napchitai-ulan-muren, of 750 feet; but the whole river-bed from bank to bank was upwards of a mile wide, and, as his guide assured him, this was entirely covered during the rainy season in summer, when the river sometimes overflows its banks. §

Naturally enough, the obstacle which had turned him back in 1873 attracted him there again, and in 1879–80 he crossed and recrossed at a higher point—first the Napchitai-ulan-muren in lat. 35° 20′, long. 93° 10′; then the other large tributary, the Toktonai-ulan-muren, in lat. 34° 10′, long. 92° 40′; and, finally, the Murui-usu itself in lat. 33° 50′, long. 92° 20′, one of the affluents of which he followed up almost to its source in the Tang-la mountains, at a height of 16,400 feet.

In 1884 Colonel Prjevalsky again visited the river near long. 96°; and in 1889 Mr. Rockhill struck it in lat. 32° 58′, long. 96° 50′, whence

* 'Tibet' (Markham), pp. lxii. 312.
† 'Travels in Tartary,' p. 119.
‡ Ibid., p. 291.
§ 'Mongolia,' vol. ii. p. 221.

he followed it down to Kawalendo, long. 98°, where it begins its course southwards. This journey he followed up in 1892 by an exploration of the river further west than had been reached by Colonel Prjevalsky. In this journey he approached so near the source of the Murui-usu in the Tangla mountains, about lat. 33° 45′, long. 90° 50′, that he could see "a few miles away the little rivulets dashing down out of the snow-clad mountains to form the stream which we were fording, and which was not over 2 feet deep, though we were in the midst of the rainy season." *

The sources of the Toktonai were guessed by him to lie some 60 miles to the north of this, and the headwaters of the Napchitai, called by him the Namchutu-ulan, which flows between the Kokoshili and Altyn Tagh ranges, were placed in the Shapka Monomakh.

The existence between these different streams of lakes with no outlet is held by Baron von Richthofen to indicate with certainty the fact, that within a comparatively recent time all this region was still a salt steppe, of which at first only portions on certain lines came into the district having an outlet to the sea.†

Without further details than those given in the Society's *Journal*,‡ it is difficult to identify the river Chumar, which Captain Wellby and Lieut. Malcolm crossed on their way from Tibet, and speak of as the main source of the Yangtse Chiang. It is suggested in the *Journal* that the Chumar may be the same as the Ma-chu. Mr. Rockhill's statement,§ that the Yellow river in its upper course is called the Ma-chu, and the proximity of the Yellow river to the Napchitai-ulan-muren, lead me to question whether A. K. may not have been incorrect in speaking of Ma-chu ‖ as one of the head-streams of the Yangtse Chiang. The account of Mr. Carey's journey ¶ shows how involved are the valleys in that region, and throws some doubt on A. K.'s accuracy.

Between the Tangla mountains, whose south slopes drain into the Tsang-po and the Salwin rivers, and the Kuenlun mountains, which form the south buttress of the Tsaidam steppes, the Yangtse Chiang, even at its source near the 90th meridian, draws on a basin nearly 240 miles in depth from north to south. Below the confluence of the three main streams this basin is somewhat contracted by the north-west south-east trend of the Baian Kara range, and the river is gradually deflected southwards. From the 99th meridian its course is almost due south, passing through the country of the Tanguts, or Si Fans, until at last it enters China. This part of its course is, roughly speaking, parallel with the Mekong and Salwin rivers.** Penned in by high mountains, which form an extension

---

* *Geographical Journal*, May 10, 1894, p. 371.
† 'China,' vol. i. p. 129.
‡ *Geog. Jour.*, February, 1897, p. 216.
§ 'Land of the Lamas.'
‖ Note to (1), *Geog. Jour.*, *supra*.
¶ *Proc. R.G.S.*, 1887, p. 741.
** Colonel Yule's Geog. Introduction to 'River of Golden Sand.'

of the great plateau of Central Asia, these rivers continue in close proximity to each other for nearly 200 miles.

Captain Gill in 1877, Count Széchenyi in 1879, Captain Bower in 1891, Prince Henri d'Orléans in 1895, and other travellers, have added to our knowledge of the country near Batang, but a considerable tract of country east of the reach between Batang and Li-kiang remained unexplored until visited by M. Bonin in 1895–96. According to him, below the angle made by the Yangtse Chiang near Li-kiang Fu, the river does not follow the course marked in the maps, but makes a sharp turn to the north in order to find a way through the snow-covered heights which bar its passage eastwards, and after reaching within a day's journey of Yung-ning Fu, it turns south through Yung-pei Fu, south of which it resumes its eastern direction, after receiving on its right bank the Pai-shui Chiang, which M. Bonin says has been erroneously considered to be the Yangtse Chiang.

M. Grenard,* on the strength of letters received from M. Bonin,† assumes that the Chin-sha—Captain Gill's "River of Golden Sand"—joins the Ya-lung in about lat. 28°, instead of lat. 26° 35′, as is generally supposed. I do not know whether M. Bonin supports this theory in the account of his travels, which has since been published. Against it are Lieut. Garnier, Mr. Hosie, and other travellers. Lieut. Garnier, who visited the junction of the Pai-shui and the Chin-sha,‡ states that, though the volume of the two rivers is much the same, the natives knew the western stream to be the more important; but he was surprised to find that the country people call the northern stream the Chin-sha, and the western stream the Pai-shui, until near Li-kiang, when the Chin-sha resumes its proper name.

Mr. Hosie, some days after crossing the Ya-lung, saw§ from a mountain summit the Pai-shui without apparently recognizing it under that name as the Chin-sha; and some days later, at a point rather west of south of Yung-pei Fu, crossed the Chin-sha, of which he says that there can be no doubt‖ as to its being the upper waters of the Yangtse Chiang.¶

As M. Bonin speaks of the country between the Ya-lung and Li-kiang as previously untravelled by Europeans, it would seem that he must have forgotten Mr. Hosie's journey, whose account is confirmed by Dr. J. A. Anderson of the China Inland Mission. This gentleman tells me that in 1891, with Messrs. Murray and Smith, he crossed the river by the iron bridge near Li-kiang, where the river is called the Chin-sha, and that they struck it again a few *li* above its confluence with the Ya-lung, and

* S. G. Paris, *Comptes Rendus*, 1896, p. 250.

† *Geog. Jour.*, November, 1896, p. 515.

‡ 'Exploration in Indo-China' (F. Garnier), vol. i. p. 502.

§ 'China,' No. 2 (1884), p. 32. ‖ Ibid., p. 35.

¶ Mr. Hosie has since drawn my attention to the name (Chin-chiang Kai) of the place where he crossed the river, as confirming the fact that the river crossed was the Chin-sha.

descended by boat past its mouth. He speaks of the Chin-sha as making an immense curve from the south before joining the Ya-lung, to avoid a large rocky mountain.

It seems to me possible that M. Bonin may have been misled by the loose manner in which the rivers are named.

If the Pai-shui is not the Chin-sha, it seems difficult to find for it a place south or west of Li-kiang between the Chin-sha and the Mekong, and neither Captain Gill nor M. Bonin alludes to the passage in that neighbourhood of a river * of the size mentioned by M. Hosie.

Rising on the south slopes of the Baian Kara range in about lat. 34°, long. 97°, near some of the headwaters of the Yellow river, the Ya-lung follows a course somewhat similar to that of the Yangtse Chiang, from which it is separated by a range of mountains the peaks of which are covered with snow. Mr. Rockhill, whose travels have taken him through much of the basin of this river, says the name means simply "the valley of the Nya" (Tibetan *Nya-rong*). M. Bonin says the Tibetan name is Nag-chu (*l'eau noire*). The Nya-chu and the Za-chu † are the two main streams of which it is formed, but there are a great number of minor tributaries, and the An-ning river, along which Mr. Baber travelled through Marco Polo's country of Cain-du, is of considerable size. Below the junction of the Ya-lung and An-ning, the river is known as the Ta-ch'ung, and is spoken of as such both by Mr. Baber and by Mr. Hosie. But, as I have mentioned already, Lieut. Garnier says that at its junction with the Chin-sha it effects a change of name with it. The chief interest of the valley attaches to its inhabitants, Si Fan, Lolos and others, to whom both Mr. Baber and Mr. Rockill have devoted great attention.

The immense depth of the gorges through which the Yangtse Chiang has cut its way in Yun Nan and west Sze Chuen,‡ and the extraordinary freaks played by its tributaries on the right bank, have prevented the course of the Yangtse Chiang below the Ya-lung from being thoroughly ascertained. Its course, as laid down by the Jesuits, appears to have been mainly mere guesswork, and some corrections have recently been made. Apparently it here attains its lowest latitude—26° N. The strength of the stream and the height of the banks above the river prevent much use being made of it for boat traffic, even in the few portions where no dangers exist. The grandness of these gorges culminates in the "Sun bridge," Tai-yang-chiao, a mountain at least 20,000 feet high, "which falls to the Yangtse Chiang in a series of terraces, which from below appear like parallel ridges, and abuts on the river into a precipice or precipices, which must be 8000 feet above its waters." §

---

* *R.G.S. Proc.* (1886), p. 378.

† The similarity of this name to that of the Tse-chu, on which Chiamdo stands, led P. Huc to believe that the Ya-lung was formed by the Chiamdo rivers, and formed a part of the Mekong ('Travels in Tartary,' p. 269).

‡ 'River of Golden Sand,' p. [107].

§ Baber, p. 115.

The main affluent on the right bank received in this part of its course is the Niu-lan river, the gorges of which are also very grand.

Mr. Baber's experience of the freaks played by the rivers on the right bank of the Yangtse Chiang was similar to that of Lieut. Garnier, who speaks of rivers in this limestone country passing over one another, splitting in two, and changing from one basin to another.

Ping-shan is generally regarded as the head of continuous navigation, but Mr. Hosie descended the river by boat from Man-i-ssu, 40 *li* higher up. A short distance below Ping-shan,* the Yangtse Chiang receives the Hêng river on its right bank. The lower part of this river was descended by Lieut. Garnier, and his party, when starting from Lao-wa-t'an, had to make two short portages. He calls it the Ta-kuan-ho near Lao-wa-t'an, and in the lower portion the Huang-chiang.

The Nan-Kuang, which joins the Yangtse Chiang near Sui Fu, was descended by Mr. Hosie from Hung-shui Kau; but the Yung-ning, which empties itself at Na-ch'i, is apparently the first river on the right bank of the Yangtse Chiang which is of importance as a trade route.†

On the left bank the Min or Wen river, at the mouth of which stands Hsu-chau Fu, or Sui Fu, is regarded by Chinese as the true source of the Yangtse Chiang, and the branch of it which passes by Kuan Hsien to Ch'eng-tu Fu is looked upon as the main stream. This river is spoken of by Marco Polo as the *Kian-suy*, which Colonel Yule‡ interprets to be the *Kiang-shui*, waters of the Kiang. It may, however, I think, mean *Kuan-shui*, the waters of Kuan Hsien.

In Kang Hsi's edict the course of the river is thus described:§ "The Min has its source to the west of the Yellow river at Ch'i-ch'i-la-ho-na,‖ in the Baian Kara range, which is called in Tibetan Maniak-tso.¶ The Min Shan of the *Han Shu* is outside the western frontier of China. This is the source of the river. The place mentioned in the *Yü-kung* as 'controlling the river,' is Nai-chu Shan,** outside Huang-shêng Kuan,†† in Sze Chuen of the present day. The ancients spoke of the sources of the river (Chiang) and the Yellow river as near one another. The passage in the *Yü-kung*, 'controlling the Chiang in the Min Shan,' refers to the stream, not to the source; of this there is satisfactory evidence. Its waters flow from Huang-sheng Kuan to Kuan Hsien, and there divide into several tens of branches, which reunite into one stream at Hsin-chin

* Ping-shan is estimated by Captain Blakiston to be 1550 miles from the sea.

† 'Three Years in West China,' pp. 68, 160.

‡ 'Marco Polo' (Yule), 2nd edit., vol. ii. p. 32.

§ Tung-hua-lu, ch. 106, A.D. 1721.

‖ I do not know what place is intended by this, which is only a transliteration of the Chinese characters.

¶ Tso probably equals chyok, Maniak-chyok, country of the Maniak, or Menia; cf. 'Land of the Lamas,' p. 218.

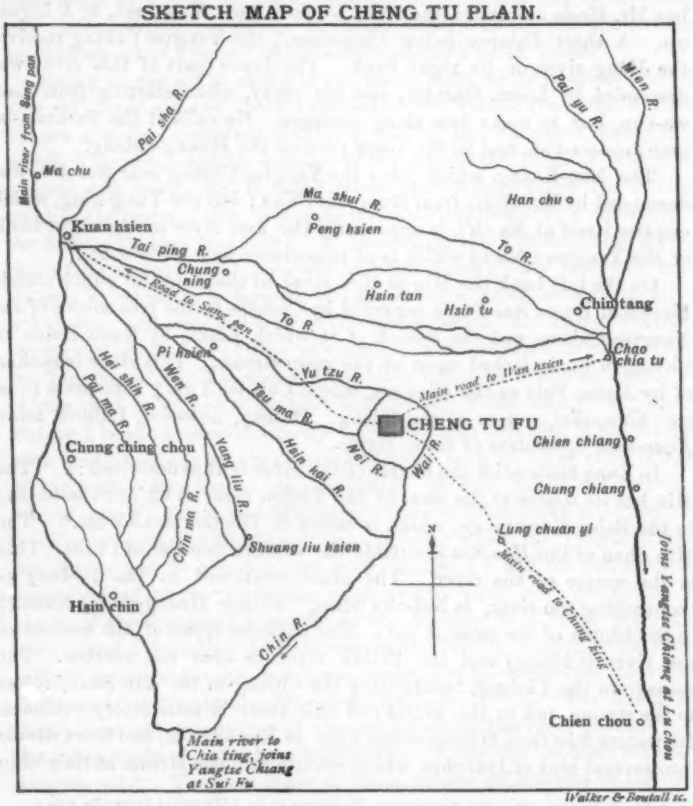
** Is this the same as the Gurbu-naidji mountains, which Prjevalsky speaks of as the eastern continuation of the Kuen-lun? ('Mongolia,' vol. ii. p. 182).

†† North of Sung-p'an Ti'ng.

Hsien, flow south-east to Hsu-chau Fu (Sui Fu), and there join the Chin-sha Chiang."

The description here given would appear to apply more correctly to the western branch of the Min than to that which passes by Kuan Hsien to Cheng-tu Fu, and which—so far as the explorations of Captain Gill and of M. Potanin show—is correctly placed by Chinese map-makers,

SKETCH MAP OF CHENG TU PLAIN.



and has its source to the north of the Min Shan, but considerably to the east of what is now spoken of as the Baian Kara range.

The statement in the ediot that all the waters reunite at Hsin-chin Hsien is very remarkable, for tradition assigns some of the waters to another river, and such a diversion actually exists. Mr. Baber * and Captain Gill † both seem to have doubted it, though Baron von

* R.G.S. 'Sup. Papers,' vol. i. p. 29.

† 'River of Golden Sand,' p. 109.

Richthofen apparently took it for granted, and I have therefore inquired very carefully into the subject. Recent journeys to Cheng-tu made by Mr. G. J. L. Litton from the east and by Mr. A. von Rosthorn from the south-east, show that the channels which are known to run east from Kuan Hsien connect at San-chiang-chên near Chin-t'ang Hsien * with the valley of the T'o river, which enters the Yangtse Chiang at Lu-chau Fu, and Mr. von Rosthorn at Kuan Hsien saw the cutting † *Li-tui*, said to have been made by Li Ping, *circ.* B.C. 250, through the hill on the left bank of the river, by which this extraordinary diversion is effected. A strong dam, called the *Tu-chiang-yen*, aids in preventing the waters of the river from following their natural course. These works are said to be intended to protect the country from inundation equally with securing its irrigation. The subjoined tracing of a map in the *Sze Chuen Gazetteer* is sent me by Mr. Litton to illustrate the water-system through the Cheng-tu plain, which probably in ancient times was a great lake, the memory of which still survives in the Chinese name *lu-hai*. Baron von Richthofen speaks of the channels as from 250 feet to 1000 feet wide,‡ but this width is considerably greater than that mentioned by other travellers, and probably refers only to the part that he visited.

Mr. Baber says § that the western branch of the Min river, which is known as the Ta-tu, or T'ung, should be regarded as the main stream, since it brings down a much greater volume of water than either of the two confluents which join it at Chia-ting Fu, below which point the Min is called the Fu river, after the three cities of Cheng-tu Fu, Chia-ting Fu, and Sui Fu. The stretch of the Tung above Wa-su K'au (a little to the east of Ta-chien-lu),‖ has in his opinion the best claim to be considered the boundary between China and Tibet. This portion of the T'ung is called by the Chinese *Chin ch'uan* ¶ ("Gold stream"), a term which is also applied to the district which it drains, and which is governed by local chiefs, and divided into greater and smaller Chin-ch'uan. The local name of the Chin-ch'uan is Chia-ch'u; the greater and smaller rivers are known as the Tsu-chin and Tsen-la.**

Of the grandeur of the scenery of the upper waters of the Ta-tu or Tung river Mr. Baber writes in enthusiastic language. Mr. von Rosthorn

---

* This is the head of the navigable portion of the T'o river. There are no less than three other rivers in this system called the T'o; the T'o itself before reaching Lü-chou is also known as the Mien, the Chung-chiang, the Chien-chiang, and the Lu-shui.

† 'Reise in West China,' p. 294 (Geog. Soc. of Vienna).

‡ 'Letter on Sze Chuen,' p. 64.

§ R.G.S. 'Sup. Papers,' vol. i. p. 45. ‖ Ibid., p. 51.

¶ The south portion of which is also the Yü-tung-ho, or Ch'ang-ho ('Reise in Tibet' (von Rosthorn), pp. 306, 307).

** 'Reise in West China' (von Rosthorn), p. 309. The higher waters of the Tsu-chin flow through the valley inhabited by the Somos, who were visited in 1896 by Mrs. Bishop.

agrees with him in considering it a more important stream than the Min branch which passes by Kuan Hsien. The latter owes its relative importance, in the eyes of the Chinese, probably in some part to the fact that it is navigable at times as far as Cheng-tu, and always as far as Hsin-chin Hsien.

After receiving the T'o river at Lu-chau Fu, the next important affluent of the Yangtse Chiang is the Chia-ling, which joins it at Chung-king. This river rises in Kan Su, as does one of its main branches, the Pai-shui, and is the last of the long series of rivers running north and south, which are such a striking feature in any map of Sze Chuen, Yun Nan, and East Tibet. Count Szechenyi travelled by boat through the portion of Shen Si traversed by the Chia-ling river.

The upper waters of the Fu Chiang, a branch of the Chia-ling which rises near Sung-pan Ting, were explored by Captain Gill in 1877, as far down as Mien Chau. This river in Dr. Bretschneider's map is also called the Honton.*

The Fu-ling, Chien Chiang, Kung-t'an, or Wu-chiang, which joins the Yangtse Chiang at Fu Chau on the right bank, is the last considerable tributary received before reaching the gorges leading to Ichang. This river is important as the first of the streams which form the great network of water-communication which binds Peking and Canton with Central China. By the Fu-ling Canton can be reached with only two short portages, and a certain amount of trade with Hankau is carried on by this and the Yuan river in preference to taking goods up the Yangtse Chiang.

The gorges which have shut in the Yangtse Chiang almost from its source close in upon it again below Fu Chau, and continue to within a few miles of Ichang, contracting the river at one or two points to a width of 150 yards.

In the autumn of 1896, some 40 miles below Wan Hsien, a landslip occurred, which carried down into the river a portion of the mountain-side, estimated by Mr. Bourne at 700 yards by 400 yards. This at present forms a complete obstacle to any hope of steam navigation between Ichang and Chung-king, and is much more formidable than the Yeh-tan, Hsin-tan, or any of the other rapids which had hitherto been in question. The Ching-tan, or Hsin-tan, was similarly formed some two hundred and fifty years ago, and it is probable, therefore, that other rapids originated in the same way.

Many rivers are received on either bank before Ichang is reached, of which the most important is the Ching-chiang, which enters the Yangtse Chiang on the right bank below Ichang. Mr. A. von Rosthorn, who travelled by this route to Wan Hsien, mentions a repetition in this limestone region of the curious phenomena witnessed by Lieut. Garnier in Yun Nan and Sze Chuen.

* It has recently been followed by Mr. A. J. Little from its upper waters to its junction with the Chia-ling river.

At Sha-shih, the port of Ching-chau Fu, the character of the country changes, and an extensive embankment, 30 feet high, and from 70 feet to 300 feet wide at the base, is necessary to protect the country from inundation. The inland water communication extending from Ching-chau to Han-kau, on the east, and connecting with the higher parts of the Han river, exposes an immense area to suffering from floods, and the city itself was almost destroyed on one occasion by freshets in the inland waters. The facilities of communication afforded by these routes make Sha-shih a centre of great commercial value, for, independent of the great highway of the Yangtse Chiang and of the canals already mentioned, there are also two large canals on the right bank of the river connecting with the Tung-ting lake, which have their outlets above and below Sha-shih.

The area of the Tung-ting lake is over 2000 square miles. Its size and its proximity to the Ichang gorges render it a most important protection to the lower parts of the Yangtse Chiang against floods descending from Sze Chuen. These find their way to the lake as to a huge reservoir; unless the rivers of Hu Nan are in flood at the same time as the Yangtse Chiang, the immediate effect produced by the latter is almost confined to the basin of the lake, and it is only gradually that the valley of the Yangtse Chiang is affected.

The area of Hu Nan is estimated at 70,000 square miles, and the whole of its drainage is through the Tung-ting lake. The more important of the rivers are the Hsiang, a branch of which known as the Lei river rises near the little Mei-ling, or Che-ling pass, on the frontier of Kwang Tung, and passes the great cities of Heng-chau, Hsiang-tan, and Chang-sha. Baron von Richthofen refers to continuous water-communication with Kwang Si as existing 120 miles west of the pass, which is kept up practically by means of gates. This is, I believe, by the main branch of the Hsiang river and *viâ* Kwei-lin Fu. So far as I can learn, the Hu Nan boats, which are occasionally seen in Kwang Si, are transported for a short distance on rollers to the river in Kwang Si, which passes Kwei-lin Fu.

According to the 'Kwang Si Gazetteer,' the Hsiang river of Hu Nan, which empties itself into the Tung-ting lake, and the Kwei or Li river, which joins the West river at Wu-chau Fu, in Kwang Si, have the same source to the south-east of Hsing-an Hsien, in Kwei-lin Fu. The Gazetteer places the source of these rivers in a temple on Hai-yang Shan, or Yang-hai Shan, called the T'ien-hsin Ssu. The divide, which is marked in some Chinese maps, takes place just to the east of Hsing-an Hsien. I do not think that this has hitherto been certified by any European traveller.

West of the Hsiang river is the Yuan river, by which Mr. Margary travelled in 1874 on the journey which opened communication for us between Burma and China. The difficulties of the route are considerable, but it offers an alternative line to the Yangtse Chiang to travellers

to Yun Nan, and is actually navigable beyond Chen-yuan Fu in Kwei Chu. A certain amount of trade also exists with Sze Chuen by a north branch of this river *viâ* Yu-yang and the Chien river to Fu Chau.

Another river of some size is the Ling-kiang, also known as the Chin-chi river, or Li river. This is only navigable on its lower waters. The higher waters pass through part of the Hu Peh tea district.

By the Han or Hsiang river, which joins the Yangtse Chiang at Hankau, communication exists by the Pai river to She-chi chen in Ho Nan, by the Tan river to Shen Si, or by the main stream to Han-chung Fu. It is said at Hankau that boats can travel up stream 4000 *li* by three different routes—the Yangtse Chiang, the Yuan river in Hu Nan, and the Han river. Père David's journey * in 1873 established the correctness of the saying as regards the Han; but the rapids above Lao-ho k'au (1360 *li* from Hankau) made navigation above that point difficult and dangerous.

The main branch of the Han rises beyond the western frontier of Hu Peh, in the high mountains south-east of Lio-yang Hsien. A northern branch of almost equal importance rises on the south slopes of the Ch'in Ling, flows south until it approaches Han-chung Fu (a few miles west of which it joins the main river), then eastwards in the valley between the Chin Ling and the continuation of the Ta-pa Shan known as Lan Shan, until it reaches Hsiang-yang Fu, whence it turns south to Hankau.

The Han has the peculiarity of increasing in width † from its mouth (200 feet) upwards, until at Sha-yang, 168 miles above Hankau, its width is half a mile, then often a mile, and even a mile and a half. The elevation of the surrounding country above low water at Hankau is 40 feet, but this diminishes until at Hsien-tao Chên, 76 miles from Hankau, the elevation is only 1 foot. The consequence is that, despite embankments, floods are of annual occurrence, and the whole country between Ching-chu Fu on the west, to some indefinite point east of the old mouth of the Han below Hankau, is under water in summer. As soon as the wheat is cut in the spring, the villagers leave the plains to retire to the hills, or to the mounds in the plains, on which are clusters of houses with boats drawn up alongside of their doors, and fleets of boats are soon seen sailing across the pasture land and fields. Their place is taken in winter by herds of ponies and cattle, whose numbers are vastly exaggerated by constant mirage.

Driven onwards by the immense pressure from behind, the waters of the Yangtse Chiang, though moving in an almost perfect plane,‡ have an average surface current throughout the year of 2 knots § at Hankau,

* 'Journal de mon. 3me voyage' (P. David).

† 'Letter on Hu Peh' (Richthofen), p. 1.

‡ The fall from Hankau is only 53 feet in 602 miles, or little over 1 inch to the mile.

§ 'Notes on the Hydrology of the Yangtse' (Dr. Guppy, R.N.).

where the river is 1450 yards broad, and has an average depth of 42 feet. In their course to the sea, the entrance to the Poyang lake is almost the only place below Wu-hsueh at which a passenger on a steamer can detect the influx of any other river. The main river, its tributaries, and the inland canals all form a part of one great network, which proclaims the delta of the river. The rivers of East Hu Peh, North Kiang Si, An Hui, and Kiang Su, which enter the Yangtse Chiang, are scarcely recognizable as fresh contributions. Even the waters of the Yellow river drained into the Yangtse Chiang in 1887 without for some time exciting any comment on the addition to its volume.

The coalfields of Hu Nan have of late concentrated attention on the Tung-ting lake and the valley of the Hsiang as the future trade route between South and Central China; but until recently the valley of the Kan, which is navigable by boat from near the Mei-ling pass on the frontier of Kwang Tung to the Poyang lake, was the great official waterway from Canton to Peking.

The Shu or Chin Chiang, which passes Nan-chang Fu to the north-west of the lake, and the Chin or Chin-chia Chiang, which descends from Kwang-hsin Fu on the north-east, are the largest of the other rivers which drain into the Poyang lake, but part of the waters of Hui-chu Fu in An Hui are also received by it, and it is noteworthy how many routes exist through the mountains on the east to Che Kiang and Fu Kien.

The lake, which is reported to be 1800 square miles in extent, acts, like the Tung-ting lake, as a great reservoir to check inundations.

On leaving Kiang Si and entering An Hui, the river at Wuhu reaches the point where a branch in olden days made its way southwards to the Chien-tang gulf, near Hang-chau Fu. Its course is conjectured to have been through a series of lagoons,* known in ancient times as the five lakes (the Chen-tse), and its delta is presumed not to have extended further east than the Lang-shan hills, but the whole subject has been a fertile source of controversy. Another branch must have passed by Sung-kiang Fu, and thence near to Shanghai. The south bank of the present course of the river seems to give indications that its bed was in former days on a higher level than now, but even at the present day it is only by embankments that the Yangtse Chiang is prevented from finding a way for some of its surplus waters by the Tai Hu and Su-chau to the sea.

The area of the Tai Hu and the other lakes in the southern delta of the Yangtse Chiang has been estimated † at 1200 square miles (out of a total area of 5400 square miles), and the total length of the small channels used for irrigation and navigation at 36,000 miles. But these

* "Inland communications in China," *C.B. of R.A.S.*, pp. 9, 112.

† "Delta of the Yangtse" (*Geog. Mag.*, October, 1877), Sam. Mosseman.

figures are based upon imperfect maps of the country, and therefore not thoroughly trustworthy.

On the north bank of the river an even more marvellous system of artificial waterworks exists. The Huai river, which, with its seventy-two tributaries, is a most important commercial route to North An Hui and Ho Nan, used to find a natural course to the sea to the south of Shan Tung, but has been diverted by a double series of lakes and innumerable canals, and has now no existence as a river east of the Grand Canal. The enlargement of some lakes and the excavation of others were carried out with a view to preventing too great a pressure on any one point of the Grand Canal south of the old course of the Yellow river. The greater part of the Huai now finds its way to the Yangtse Chiang through different openings in a large canal, which runs almost parallel with the river for a distance of 140 miles. North of this canal lies an immense parallelogram, estimated by Père Gandar at 2,300,000 hectares (= 8876 square miles) in extent, which is below the water-level. This is intersected by a series of waterways kept under the most careful control, and constitutes one of the most valuable ricefields in the country. To protect it from inundations by the sea, immense dykes and a large canal stretch north and south between the Yangtse Chiang and the old course of the Yellow river. Through these dykes are eighteen openings for canals to the sea, but the main drainage is southwards to the Yangtse Chiang. Between the dykes and the sea lie the flats which form the great salt-fields of Central China.

The Yangtse Chiang in its lower reaches is subject to great and rapid changes, of which little trace is evident to the eye after the lapse of a few years, though the depth of the river in many parts is 140 feet and more. One of the most notable instances is at Chin-kiang. The earliest European travellers to Peking by the Grand Canal speak invariably of the city of Kua Chau, and only refer incidentally to the passage of the Yangtse Chiang. At present the nearest entrances to the northern and southern portions of the Grand Canal are miles apart; the passage between them, along the waters of the Yangtse Chiang, is often tedious and sometimes impracticable. But at that time the southern entrance to the canal was by a canal which ran between Chin-kiang and the river, and debouched opposite Golden island, which was within hailing distance of Kua Chau.

When our fleet ascended the Yangtse Chiang in 1842, it was to the south of this island that it passed. Now to the south of "the island" is cultivated land, studded with trees and villages, and the only existing canal south of Golden island is so shallow as to be in winter not navigable even for boats. On the north of the so-called island (Golden island) the city of Kua Chau has been completely engulfed, and even its north wall has long since been lost to sight.

The changes which are taking place in the lower reaches of the river, in the formation of islands and the alteration of channels, are on an even

larger scale. One of the best-known instances is the island of Tsung-ming, near Shanghai, the population of which rose * from 12,700 families at the end of the thirteenth century to 89,000 at the beginning of the eighteenth, and is now estimated at 1,150,000 souls.

The great river known to Europeans throughout its whole length as the Yangtse, or Yangtse Chiang, from the name which it bears on Chinese maps in its tidal portion only, undergoes many a change of name. In its higher waters in Tibet, the Murus, or Mur-usu, or Murui-osu ("Tortuous † river") joins the Napchitai-ulan-muren and Toktonai-ulan-muren, and below their confluence the river is known as the Dre-chu, or Di-chu,‡ variations of which have reached us through different travellers in Bichu, Bicui, Brichu, and the Brius of Marco Polo. Its Tibetan name is Link-arab, and the Chinese name § Tung-tien-ho. Where the river forms the boundary between Tibet and China, it is called by Chinese the Chin (or Kin) sha Chiang, and by Tibetans the N'geh-chu; near the confluence of the Yalung it is called the Pai-shui Chiang, or White Water river; and as far as Sui Fu (or Sü-chu Fu) the Chin Ho.‖ Below this it is called the Ta Ho, or Ta Chiang ("Great river"), and also as far as Wan Hsien, the Min Chiang.¶ In the gorges of Ichang it is the Ta-ch'a Ho ** ("river of Great Débris"). At Sha-shih it has the name of Ching Chiang from Ching, an ancient Division of China, through which it passes. Below Hankau it is called the Chiang, Ch'ang Chiang (Long river), Ta Chiang, or Ta-kuan Chiang ("Great Official river"), and for the last 200 miles of its course it appears as the Yangtse Chiang, a name which it gains from Yang, another of the ancient Divisions of the empire, and which is still retained by Yang-chau Fu.

The fall of the river is very rapid. Mr. Rockhill assigns an altitude of 13,000 feet †† to the place where he first crossed it, some distance below the junction of the Mur-usu with the Napchitai and Toktonai rivers, and of 12,000 feet to the ferry where he recrossed it 84 miles lower down. From Batang (8540 feet) to Wa-wu, in Sze Chuen (1900 feet), the fall was estimated by Mr. Baber at not less than 8 feet per mile; thence to Huang-kuo-shu (1200 feet), at 6 feet per mile; below this to Ping-shan (1025 feet), about 3 feet; and from Ping-shan to Chung-ching (630 feet), approximately 19 inches, and in its lower course less than 6 inches. The fall between Chung-ching and Ichang (129 feet) is about 13½ inches; thence to Hankau (53 feet) only 2½ inches, and from Hankau to the sea little more than 1 inch per mile.

---

* 'L'Ile de Tsong-ming' (Le P. H. Havret, S.J.), pp. 37, 38.

† 'Mongolia' (Prjevalsky), vol. ii. pp. 221, 306; 'Land of the Lamas,' p. 196.

‡ Ibid. The meaning of this is uncertain. Mr. Rockhill disputes Colonel Prjevalsky's explanation of Cow Yak river.

§ Ibid. ‖ Baber, p. 107.

¶ 'Ichang to Chung King' (Rosthorn), p. 30.

** 'River of Golden Sand,' p. 67. †† 'Land of the Lamas,' pp. 201, 380.

The diagrams published annually * by the Imperial Maritime Customs, showing the rise and fall of the Yangtse Chiang at the Treaty ports, have thrown some little light on the relations of the different confluents of the Yangtse Chiang to each other, and of the part played by the Tung-ting lake as a check against sudden floods in the lower parts of the river. Judged by these diagrams, the height of the water at Hankau would appear to be almost independent of that brought down from Sze Chuen, though at Chung-king the Yangtse Chiang, with the Chia-ling, are together over 900 yards wide, and the annual rainfall is 38 inches, and though the volume of water which passes Ichang † was estimated at 500,000 cubic feet per second.

For instance, in June, 1892, when the river was only 13 feet above low-water mark at Chung-king, at Hankau it stood at 35 feet. In July the river at Chung-king was swollen by a freshet from 38½ feet to 97 feet, and produced an immediate rise at Ichang from 29½ to 49 feet; but at Hankau the rise was only 4 feet, and before the end of the month the river at Hankau fell without any regard to later freshets at Ichang.

The year 1890 was memorable at Hankau, as the river rose steadily through June until it reached 44 feet, then fell a few feet, to rise again in the latter part of July and beginning of August, until it reached 47 feet, and it did not fall below 45 feet until September 21. But at Ichang nothing had occurred to account for the flood at Hankau, with the exception of three moderate freshets in the space of four weeks, the last of them occurring on August 5, after which date the river at Ichang was never very high.

In 1889 the river at Hankau from July 4 to November 15 was never below 40 feet, but at Ichang there was no very high water, and on November 12 the level there had fallen to 12½ feet.

Though the state of the river at Hankau, in consequence of its low level, depends in part upon the rainfall in the lower waters and their condition, yet it is evident from the above figures that the Hu Nan rivers and the Han river are very important factors. Indeed, the Yangtse Chiang at Ichang, above the confluence of these rivers, seems so disproportionately small, in comparison with the volume of its upper waters and of its tributaries, that again and again the question has occurred to me whether some of its waters are lost in the limestone regions which it traverses.

---

* 'Reports on Trade at Treaty Ports.'

† The extreme width of the river at Ichang is 1015 yards; in winter its width is 643 yards; 46 feet 2 inches is the highest water-mark. At Hankau 48 feet is the highest water-mark above low water.

CIRCUMNAVIGATION OF LAKE BANGWEOLO.*

(July to September, 1896.)

By POULETT WEATHERLEY.

PREFATORY REMARKS BY THE PRESIDENT.

MR. WEATHERLEY'S examination of Lake Bangweolo will perhaps be more fully appreciated if his account of the circumnavigation in his steel boat is prefaced by a very brief retrospect of the exploring work that had previously been accomplished in this region.

It was in 1798 that the accomplished Portuguese traveller, Dr. Lacerda, discovered the river Chambeze, the chief eastern tributary of Lake Bangweolo, and made his way round its northern side towards the capital of the chief Kazembe. He died within a march or two of that place. In 1802 to 1811, the Pombeiros, sent by Ferdinand de Noronha, Captain-General of Angola, traversed the same country; and in 1831, the Portuguese captains Monteiro and Gamitto also followed the route of Lacerda, but without astronomical instruments.

About thirty years had elapsed before Dr. Livingstone, in December, 1863, left the western shore of Lake Nyasa at Kota-kota, and, making a journey of many days to the north-west, received tidings of the existence of a lake called Bemba, whence issued the river of Luapula, flowing to Lake Mweru. He afterwards traversed the country in the footsteps of Lacerda, crossing the Chambeze and receiving fuller information respecting the lake. It is a large but shallow expanse of water, with swampy shores to the east and south, being the overflowing of the country at the base of the Tanganyika plateau. The first name received by Livingstone, of Bemba, refers to the Bemba nation inhabiting the K-emba region to the north of the lake. His other name of Bangweolo is unknown in the country. Mweru, or Mwelu, is the universal name for a lake among the natives, and *Pa-mwelo*, as suggested by Mr. Sharpe, may be the word rendered by Livingstone *Ba-ngwelo*, the word meaning "at the lake." Bangweolo is now the generally received name.

In his last journey, Dr. Livingstone crossed the Chambeze about a week's journey from its mouth, then re-crossed and made his way to the north shore of the lake. Crossing to an island called Matipa, he eventually reached the southern side, and began a journey through deadly swamps to the Luapula river. But he was taken ill, and had to be carried. Reaching the country of Ilala, he was not allowed to stay in the town of the chief Chitambo, and his faithful followers took him back towards Kabenda, a few hours' march, and built him a hut. His devoted servants, Majwara and Susi, tenderly nursed him, and he died

* Paper read at the Royal Geographical Society, June 6, 1898. Map, p. 336.

on May 4, 1873. This event makes the southern shore of Lake Bangweolo almost classic ground to geographers. Dr. Livingstone's heart was buried under a venerable *mpundu* tree. The spot was recently visited by Mr. Weatherley, who sent some of the leaves home from Livingstone's tree. They are now preserved in a glass case in the hall of your house at 1, Savile Row. The story of the last journey of the illustrious explorer must always add a special interest to the shores of Lake Bangweolo.

The next visitor to the lake was Lieut. Victor Giraud of the French navy, who landed at Dar-es-Salaam, and crossed the country to Lake Bangweolo, embarking on its waters, after having forced a passage through the dense growth of rushes, on July 18, 1883. He visited the islands of Kisi and Kirui in a small portable boat he had brought with him, and then made for the outlet of the Luapula, in the south-west corner of the lake. He descended the river for several days, but when he reached the first rapid he was attacked by Meri-meri, the chief of the Wa-usi, to whom, after a brief resistance, he surrendered at discretion. His boat, cloth, and ammunition were taken from him, and at last he escaped to Kazembe's, where the fleecing process was continued. Finally, he fled to an international station on Lake Tanganyika, almost destitute. It was natural, under such circumstances, that he should have failed to understand or appreciate the native character.

In 1890, our Gold Medalist, Mr. Joseph Thomson, was employed by Mr. Rhodes and the British South African Company to explore the less-known parts of British Central Africa. He was joined by the son of our old friend Colonel Grant at Kimberley, and they reached Blantyre in July, 1890. Leaving Kota-kota, on the western shore of Nyasa, Thomson reached Chitambo's, but he was still 20 miles from the spot where Livingstone died. His earnest desire to visit it was prevented by sickness in his caravan. Without going any nearer to the lake, he made for the river Luapula, and followed its course as far as a place called Kalonga, returning to Blantyre in February, 1891.

In the same year, Mr. Alfred Sharpe made an interesting journey from Fort Abercorn, a station established by Sir Harry Johnston at the southern extremity of Tanganyika, in 1889. Mr. Sharpe reached Kazembe's in September, 1890, rounded the head of Lake Mweru, and penetrated into the Garenganze country to the Lufira river. In August, 1892, Mr. Sharpe again set out from Fort Abercorn to Lake Mweru, with a steel boat in sections. He was thus enabled to navigate Lake Mweru, and to ascend the river Luapula as far as the head of navigation, at the rapids, to which he gave the name of the Johnston falls. He received from our Council the Cuthbert Peek award in 1896.

It will have been seen that Bangweolo had only been visited once, by M. Giraud, since the time of Livingstone. Its circumnavigation and complete exploration was reserved for Mr. Powlett Weatherley. This

indefatigable explorer left England, on his third African expedition, in January, 1894, embarking on the Zambezi in May. He took out a boat, which was swamped and lost when being towed up the river. In August he reached Fort Abercorn, and in July his friend, Mr. Leslie Sweet, sent him out another steel boat in sections, which arrived safely, and was called the *Vigilant*. From September, 1894, to June, 1895, Mr. Weatherley was engaged in building a house and barracks near Lake Tanganyika, at a place called Momira, in the Ulungu hills. He also planted a garden, and devoted all his spare time to teaching his boys not to be idle. He made them compete at long and high jumps, leap-frog, human cock-fighting, and rope-climbing; but of course he took care that, at everything he taught them, he could lick their heads off. Momira, where there is a beautiful clear running stream, is intended as a sanatarium.

In July, Mr. Weatherley set out for Lake Mweru, crossing the country of the powerful and generally hostile Awemba, a native whose influence extends from Tanganyika to Mweru, under the great chief Kitiamkulu. He succeeded in gaining the friendship of the Awemba, and established his camp at Chipamba, on Lake Mweru. Here he found himself in an important position at the opening of the year 1896. He was the only white man who was on friendly terms with the Awemba, and his word was law on the Ulungu hills and amongst the surrounding tribes. He is a dead shot, and is known far and near as "N'Gadamika," a word which has that meaning. His influence with the native chiefs is marvellous, and he is beloved by his own followers. His power of bringing about friendly intercourse with chiefs into whose territory no European has hitherto ventured, and his knowledge of the people, ought to be utilized for the good of his country. At the end of June, 1896, Mr. Weatherley left Chipamba, on Lake Mweru, with the object of exploring Bangweolo, and the result is recorded in this paper. He was the first to circumnavigate the lake, and his examinations of the north-western and western sides constitute new discoveries. It is needless to dwell further on Mr. Weatherley's qualifications. "No one," said Livingstone, "ever gains much influence in Africa without purity and uprightness," to which may be added fearlessness. Mr. Weatherley has gained astonishing influence. His paper on the circumnavigation of Lake Bangweolo speaks for itself.

I started on June 25, from Chipamba on Lake Mweru, with the intention of exploring the region of the upper Luapula, and of circumnavigating Lake Bangweolo. My party consisted of about two hundred and fifty Wawemba, Ajawa, Afipa, Amambwe, Alungu, Atonga, Makololo, and Asora. The latter, about eighty, came over from the west side of Mweru.

From the south end of Lake Mweru, opposite Kilwa island, I struck

south-west, coming to a fine and most picturesque range of mountains, called the Kunde-lungu. I travelled along the foot of this range southwards, at a distance of 40 or 50 miles west of the river Luapula. Reaching lat. 10° 48′ S., I struck eastward to the river, where I put the steel boat *Vigilant* * together. It had been sent out in sections. We had great difficulty in poling and dragging her up the continuous succession of rapids. The current was terrific, and eight Atonga men failed to make headway against it, though the boat was empty. Over and over again we were swept back down river at tremendous speed, after vainly breaking our hearts against the overwhelming rush of the

SWAMP NEAR LIFUNGA.

enormous volume of water. Where practicable, the crew got out and hauled the boat over the worst parts. This constant battle only terminated at Chinama's boma, which I make to be 11° 13′ 49″ S. by * Vega; but my observations were probably vitiated by the unsatisfactory artificial horizon I had to use, owing to having no quicksilver. Here I crossed the Luapula, and encamped about a mile south of Chinama's boma.

Negotiations had to be entered into with Mieri-mieri, the great Usi chief, and I passed sixteen anxious days at Chinama's, fully determined to cross the country to Lake Bangweolo through the Wa-usi, whatever

* Sent out to him in sections by Mr. Leslie Sweet, 2, Bedford Row, and Woodham Grange, Horsell, Surrey.

it might cost me. Chinama was an awful old scoundrel, and gave me a heap of worry, trouble, and anxiety. He paid me a visit, before I crossed the river, with a very large armed force, which I returned. But for a long time he refused either guides or carriers. At last I sent to tell him that if he did not see fit to assist me in any way, and to cease putting needless difficulties in my path, doing all he could to prevent me from crossing to Bangweolo, I should look on him as an enemy. He collapsed at once, and sent me twenty men and two guides, one an excellent man who came with his wife, and ten Wa-usi. Four of the ten were tiny but plucky youngsters—Kalulu, Karungwe, Chibwe, and

LAKE MWERO.

Mwana Kalune. I shall be very sorry to say good-bye to these four when the rains cease and they return homewards. I watch them from my verandah whilst I write, playing cricket, which I taught them (single wicket, of course), and which they love, rushing about, laughing and shouting, as happy as any little English boys at home. The ball, when they have done, is brought back to the verandah and put away. Then down they drop on their knees, clap their little hands, and rush away to hoe in their gardens. These four, with the four who wait at table and work in the kitchen, keep Chipamba alive with their merry laughter.

Leaving Chinama's on August 12, we had a perfectly delightful journey across the plateau between the Luapula and Lake Bangweolo, though half frozen at night. One memorable night the thermometer went down to 36°. During the daytime, however, it was very pleasant. On the second day messengers arrived from Chinama's, begging me to return, and saying that the great chief Mieri-mieri was collecting all his Wa-usi to attack and shoot me. I sent back a message that I would return for no man, and that if Mieri-mieri attacked me, I would teach him to leave white men alone. It was an empty boast, for, though we could muster about eighty guns, we had barely a small handful of powder each. My own battery was, of course, well supplied. I daily practised my men to form up, so as to protect the loads in case of attack. The height of the plateau above the sea averaged 4000 feet, and the Wa-usi turned out to be very friendly, bringing presents of sheep, goats, and fowls. The country was beautifully wooded, and well watered by many delightful streams, but there was a total absence of game.

On the 20th we reached Miete, or Mewenge's boma, the chief of the north-western Wa-usi. The country inhabited by this people is so vast that it is divided up under different subordinate chiefs, who all acknowledge Mieri-mieri as supreme head. If they were united they would form a powerful nation, but this is far from being the case. Miete was friendly; and on the 23rd we started in high spirits. A pleasant walk through beautifully wooded country brought us out on to a narrow plain covered with cultivation. To the extreme right was a picturesque little boma, and beyond it a very blue lakelet called Chevinde. To our right front rose sand-dunes 100 feet in height. From the top of one of them, which I ascended, there was a view of the great lake. There it was—Bangweolo! stretching away to the north-east and east, an unruffled sheet of steely-blue water, glittering in bright sunshine. The coast to the south curved towards the north in two crescents. Our side was all pure white sand, with stunted trees and bushes; the country lying behind us forming belts of swamp, waist-deep in hot black mud and water.

Bangweolo deserves its name—there, "where sky and water meet!" They do, or they seem to do so, for there is seldom any perceptible horizon to be seen when standing on a level with the lake; and what colouring! An hour before to half an hour after sunset the whole scene is an exquisite blending of æsthetic colouring; and there seems to be a constant haze over Bangweolo which has a marvellously softening effect, while the blending of colours is at times indescribably beautiful. The water, up to 200 yards or so from the shore, is a sage-green, and further on it is the very clearest, purest, and most limpid blue. This evening there was a delicate salmon-pink flush diffused by the setting sun on the water, and there was no line to mark the horizon; the two elements, air and water, melted one into the other. Fringing the sandy

shore of snowy whiteness is a mass of every tint of green, except where the line of sandhills rises, covered with dense scrub of a dull-green colour, almost blue.

Next day the camp swarmed with visitors, the chief event of the day being the unexpected arrival of Mieri-mieri's capitao, with a large suite. He brought me six fine ivory bracelets from the great chief, as a token of good-will. My camp was in a delightful position, topping a great white sandhill, about 100 feet above the lake. Mweru shores abound in small shells. Bangweolo, on the other hand, is absolutely shell-less. The sand of Mweru is much coarser than that of Bangweolo,

VIEW OF KILWA ISLAND.

and of a totally different colour, the former brown or yellow and coarse, the latter fine and pure white. Bangweolo is of no depth. I sounded in many places, but never got a sounding over 15 feet. Its surface is therefore usually still, a very strong wind raising but the smallest sea. It appears to me nothing but a flooded district. I fancy that it was formed by the water from the great watershed of the Tanganyika plateau, with its very plentiful supply, gradually overflowing the country at the base. The overflow has been checked to the west and south-west by a rim of rock; but the east and south-east have no such barrier, and in that direction there is a vast swamp from 20 to 40 miles in breadth. The Liposochi and Luena to the north, and the Chambeze to the east, are, it appears, the chief contributors to the water-supply.

On the west the streams running into Bangweolo—and they are practically what we should term brooks—seem to radiate towards one inlet in the south-west. From this corner, round the south of Bangweolo, there is nothing to augment the volume of water.

Many islanders came across to visit us, and sell fish. They were very friendly. It is an extremely pretty sight to see six or eight men rushing a canoe through the water, which is still as oil as a rule. They use a long paddle, and work standing. At a distance they look as if they were standing on the surface of the lake itself. One can hear the swish of the water cleft by the prow of the canoe a long distance off.

In the afternoon of the 27th I paid a visit to Karoma's boma, paddling across the corner of the lake, a distance of 3 miles. He was away, but as the *Vigilant* neared the boma we saw the white sandhills swarming with natives, their black bodies being silhouetted against the snow-white background of sand. They all carried tufted bows, spears, axes, and guns. I cast an eye at *our* defensive weapons, and found they consisted of a bow and one arrow. I jumped on shore amongst the densely packed crowd. Karoma's representative gave the order, and down they all dropped on their knees, bending their heads close to the ground. It was a curious sight, looking over that sea of black heads. On hearing that Karoma was away, I stayed but a few minutes, and paddled back.

I found the height of Bangweolo above the sea to be 3765 feet, and the latitude of our camp, near the south-west corner, 11° 12′ S.—mean of four observations of * Vega; but I had no quicksilver, and had to use a looking-glass levelled with shot.

On August 30 I again left the camp, with twenty-five men, and received a hearty welcome from Karoma, who had returned. He said that Arabs had ceased coming his way; but I was greatly surprised to find that the natives did not seem to object to being sold. I spoke to the natives themselves, asking no end of questions, and their replies always came to the same thing—that they had no objection. Some professed great willingness, and even volunteered, to be purchased by me; but I told them we English did not allow people to be purchased—a bit of information which astonished them not a little.

Passing on our voyage, we reached Kavende point and encamped, being hospitably received as usual. I explored the island of M'bawala, about 20 miles long and 1000 yards from the shore, and shot some antelope after a long and trying stalk. Having spotted two fine rams on the opposite side of a sheet of water, I crept along for some distance with two boys; but the rams saw us and cantered away, then halted to gaze at us. Emerging from the water across which we had waded, we went on through the thick, black, hot smelly mud, and crept cautiously up a slight rise. I then let drive at over 200 yards. The antelope walked slowly a few paces, and then dropped. The native fishermen came willingly to help us to carry it to the *Vigilant*.

Next day we proceeded through a labyrinth of papyrus islands towards the outlet of the Luapula. The water was very shallow, averaging 4 feet, motionless as oil, and its surface covered with myriads of purple, lilac, and white water-lilies—some with light green leaves, others bronze coloured and blood-red on the under side. Nothing was to be seen in front or on the sides, but the tall papyrus. Panta point is the most eastern extremity of the sandhill and rocky rim, which continues round the west and south-west to the Luapula outlet. It is a well-wooded bluff about 50 feet above the lake. Here the people brought supplies of all sorts for sale.

LAKE BANGWEOLO.

Next morning we left Panta point, and reached the south-west point of Kirui island at 6.15 p.m., landing at Lupaku's boma, which is of good size and has its palisades at the edge of the lake. Surrounding it were high, almost leafless skeletons of trees called lipupu. They are of great use in strengthening the stockade of a village, growing quickly. It seems, however, to be more of a cactus than a real tree, for a hollow tube runs through the trunk, filled with white sap, which burns like euphorbia juice. It burns the skin, the remedy being the bark of the nkula tree ground to powder. This powder is used by the natives for dyeing their bodies, and also calico, a most lovely carmine.

We were heartily welcomed, and next morning I found the whole population squatting outside my tent, waiting patiently for my

appearance. The chief, Inpako, was a delightful old chap, very friendly and chatty. He contemplated me with a smile that was a mixture of astonishment and amusement. He asked for nothing, and was delighted with what I gave him. He said that Giraud passed a night on shore here, close to his boat. He remembered nothing of him but his moustaches, which stuck out on either side. That was all I could gather concerning Giraud during my voyage round the lake. The man had vanished from the natives' minds, but the memory of the moustaches lingered still. I could not help thinking of the Cheshire cat in 'Alice in Wonderland,' which vanished all but its smile.

The position of the mouth of the Chambezi can only be guessed at, as there is a sea of papyrus round it. No one could suppose that there was the mouth of a river near. The natives told me that the water was too shallow for a canoe to ascend it in the dry season. It takes days to reach it through the intricate winding channels in the papyrus.

On September 5 I received a message from a chief in the north part of Kirui island, begging I would stay so that he could see me. I therefore sent the *Vigilant* for him. While she was away, I saw fourteen big canoes approaching our landing-place, and I asked Lupako who they were. They had come with presents. The chief, named Chimembe, arrived in the *Vigilant*, and was very friendly. They all seemed to be in great fear of a chief named Yombwe, of the Wena Luwumbu, who inhabited the north and west coasts of the lake from the Liposochi to the Chambezi.

The more I saw of the natives of the island of Kirui, the more I liked them. They were quiet, hospitable, exceedingly friendly, and most inoffensive. The island is low, beautifully wooded, well peopled, and cultivated. Sorghum, cassava, sweet potatoes, ground-nuts, beans, pumpkins, and some Indian corn, plantains, and bananas are grown and thrive. The islanders, as well as those on the coast, are great fishers, and the fish they catch (which appeared to me similar to those caught in Lake Mweru) form the principal article of diet. The fish are eaten with flour of the pounded sorghum and cassava. Ground-nuts, pounded up into a paste, with boiled pumpkin-leaves, are much relished as an addition to the *n'sima*, which is the name given to the flour of either maize or cassava. Both pumpkin and cassava leaves, when young, are excellent as a vegetable, resembling wild spinach in taste. The castor-oil plant, of course, flourished, but the oil extracted from it is not nearly so much in favour as that from the berries of the m'sikisi tree. These fine trees, of considerable girth and height, with great spreading branches and a mass of deepest green glossy leaves, are carefully cultivated by generation after generation round the shores of Bangweolo. I consider these, together with the mupundu, as absolutely unrivalled in beauty, as well as for the delightful shade they give, by any other trees in Central Africa.

I found that Kirui, in common with the other two islands, M'Bawala and Kisi, reared a good number of sheep, the broad-tailed kind, and goats. Nobody remembered any one who could remember any game on the island of Kirui.

On September 6 we left Kirui, with every expression of regret from the people. As for myself, the island will always have a tender spot in my heart. Crossing to the island of Kisi, a bit of a breeze sprang up about midway, so the canoes closed in on the *Vigilant* in case of an accident, they all being of the very groggiest, narrowest, leakiest, and smallest description. The paddlers begged the Atonga in the *Vigilant*

VIEW OF THE LUAPULA.

to leave off singing, for fear of increasing the wind. How like our own sailors in the matter of whistling! In deference to their wishes, I ordered my crew to shut up. But it only took us about three-quarters of an hour to reach the east coast of Kisi. About halfway across I found only 11 feet of water.

On reaching Kisi we coasted south a little, making for a rise which I thought suitable for a camp, a little beyond a fair-sized village. Ordering my people to go on to the rise and form a camp, I landed amongst the villagers, who were all on their knees preparing to tota. The signal is given by the chief or his representative, and at each

clap the hands, no matter how vast the throng, strike each other simultaneously. The scene was a perfect picture. An English homestead in the heart of Kent could not have presented a more peaceful, prosperous sight. In front of the village, which nestled amid a mass of lipupu and banana trees for about 100 yards back from the beach, there was a long stretch of beautiful fresh green grass—almost turf. On this many sheep and goats were browsing, tended by little mites in the garb of nature. All round, at the back of the village, were fields of grain and cassava, and about 500 yards to the left there was an enormous clump of trees called m'situ. Beyond this again was the hill on which I intended to form my camp. There were many small canoes drawn up on the sand, and numerous fishing-nets. The chief, whose name was Konjé, also remembered Giraud's moustaches.

The morning after my arrival there was an enormous gathering of natives at my camp, all squatted in semicircles round their headmen, and the whole in a circle round my camp. The women kept outside the male crowd, and chiefly came to do the bartering part of the business. The chief of the island was a very good sort, and took the most intelligent interest in my guns. His great joy was the "breaking" and "mending" of my rifles. People used to come and beg me to "break" my guns, so that they might see them "mended." Goodness only knows how far many travelled, or how many came, just to see this extraordinary bit of "medicine."

Kisi is not a bit like the island depicted on our maps. From the south for 6 miles it is the shape of M'bawala, U; then it broadens out to the east and west. Between the oblong bit and the widening out the island sinks as if it had been cut in half by the water. On the south side of this dip there are some high sand-dunes.

The oblong part to the south is about 1½ mile in width, and at the north end is the row of sand-dunes, covered with coarse yellow grass. Beyond the dip the ground rises, and is covered with scrub and a few trees of fair size. The southern oblong is flat, and a mass of cultivation, with many fine msikisi trees dotted about. From the top of the dunes I could see the western coast of Bangweolo, at a distance of about 15 miles.

On the 10th I walked across Kisi to the west coast, to take the sun with the lake horizon, the looking-glass and star business breaking my heart. I was walking along, buried in thought, when I heard a soft clapping of hands to my left. Looking in that direction, I saw a comely, middle-aged matron totaing and smiling amidst her cassava. Her coiffure was coloured red with ukula and oil, and bright with beads. She wore many bright iron bangles as ornaments, and was clothed in mitai (bark) cloth dyed with ukula, and neatly embroidered with patterns sewn with light-coloured grass, which in the sunshine shone like gold thread. Her neck was encircled by two or three rows of

beads, amongst which I recognized some I had introduced on the island. She had risen from her knees, and was regarding me with great curiosity and, I trust, admiration, when I turned my face to her and, smiling, said, "Good morning, mother." The buxom dame's face simply beamed. Down she flopped on her exceedingly well-covered knees, and announced, her face rippling over with smiles, "I am the wife of Chamata." I cannot say that the information interested me particularly, but I could not help congratulating Chamata, whoever he may have been, on the possession of a lady so evidently proud of being his spouse. I had, until that moment, been of the opinion that marital fidelity round Bangweolo—well, the less said about it the better.

JOHNSTON FALLS.

I reached the west coast, and stationed myself on an anthill as close as I could to the water's edge, so as to be able to guess my height above the lake-level fairly correctly. By degrees a big crowd came from a boma close by, and sat round the ant-heap in dead silence. I took readings for a long time, judging my height above the lake to be 12 feet. The resulting latitude was 11° 3′ S. In the afternoon I went in the *Vigilant* to photograph what I could see of M'bawala from Kisi. Landing about a mile from the south point, with my capitao Sapora carrying the camera, I happened to remark, as I walked along, that it was odd we had come across no hippo pits. "We did," he replied, with a smile; "for you walked over the top of one. It was too late for me

to call out, for you were walking so fast in front; but, seeing the ground bend under you, I walked round it." Wise man! I thought, especially as he would scale a couple of stone more than I do.

It was a perfect evening. Such a sunset! there was a warm red glow cast by the sun over everything. M'bawala and Kirui, to the south and east respectively, floated in a quivering haze. Lake and sky melted one into the other, forming a vast expanse of most exquisite blue. The islands were a tone deeper blue, with touches of buff-coloured sand here and there, lighting up the shore. My path led through masses of cultivation, chiefly cassava, with its bright green leaves and ruddy brown stems. Dotted about were huge msikisi trees, with their dark green glossy leaves and abundant masses of shade, a striking contrast to the vivid emerald green spread out around them. Close to the shore were three or four unenclosed villages, nestling amid bananas and lipupu trees. Scattered about, in groups and singly, were natives enjoying the pleasant warmth amongst the high-roofed, neatly thatched, roomy huts. The thatch is nearly chocolate-brown at the apex, gradually becoming lighter, till at the base it was almost silver. These roofs are perfectly lovely under the light of the full moon, the softness of colour being indescribable. Nearly all the people, young and old, were employed in some way or other, making and mending mats, beating out the bark of the mitai trees into cloth, carving pipe-bowls, mending bows, smoking or chatting. The women were trooping in from the fields, carrying pumpkins, cassava, bundles of firewood, or calabashes of water from the lake, all loads being balanced on their heads. The sheep and goats were being driven homeward to be penned for the night.

Happy little island, and happy islanders! War never comes nigh them. They know nothing of the outside world. They seem to wish for nothing. Why should they? they have all they want. May it be centuries before civilization, with its innumerable attendant evils, finds out and robs little Kisi of the peace and contentment it now enjoys!

While I was away from the camp, the chief M'Bulu came and left a message to the effect that if we heard drums beating at night, we were not to think it was war; it was only because his mother was just dead. Now, I call that real thoughtfulness.

I paddled back to camp in the *Vigilant*, close in shore. In every direction were canoes fishing or returning with their hauls. The reflections in the unruffled surface of the lake were marvellous. Canoes and canoemen were mirrored as in a looking-glass. In the soft haze, which made it impossible to distinguish water from sky, canoes and the islands of Kirui and M'bawala appeared as if suspended in mid-air. The islanders crowded to the water's edge opposite their bomas, to see the *Vigilant* paddle past, and as each crowd knelt in its turn, the sound of hand-clapping came to us over the water.

At 4 p.m. of September 9 we left Kisi, a huge crowd assembling to bid us farewell and entreat us to return again. At 6.15 we landed near Kasitu's small boma, on the northern part of Kirui. I was sleeping soundly, when I became conscious of a voice at my tent door, saying, "Chief! Yombwe has arrived." He could not have come at a more inconvenient time, as there were only eight men in the camp. The only thing to be done was to brazen it out. After having got my presents ready, I sent word to say that I was willing to receive him. As he approached, I pretended to be engrossed in a magazine, perfectly oblivious of anybody or anything in the vicinity. I thought it more diplomatic to receive him in a stand-offish fashion, as any eagerness to

VILLAGE NEAR KISI.

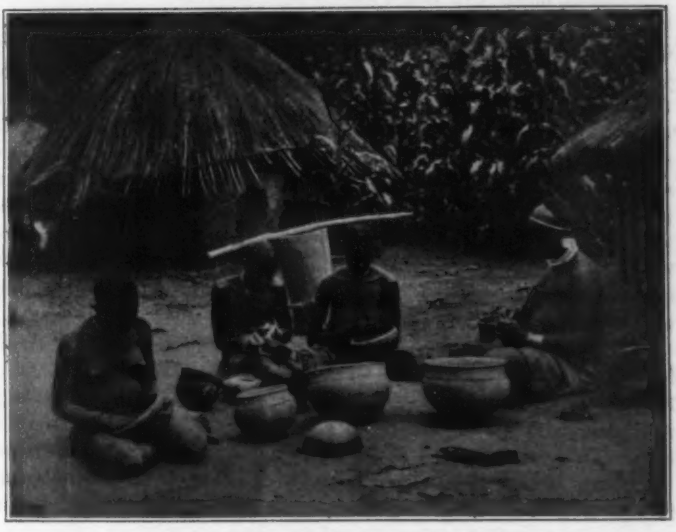
meet him might have been misconstrued into anxiety for his friendship. As a matter of fact, I was anxious for his friendship, but I was not going to show it. Keeping one eye on my book, and the other on Yombwe and his crowd, I noticed with a sense of relief that they were unarmed. When close to my chair, I put down my book carefully, got up, and, holding out my hand, said, "Good morning, Yombwe." He was of most unprepossessing appearance, and obviously ill at ease in my presence; about fifty years of age, below medium size, with small cunning eyes. He was the terror of Kirui and the surrounding country, though but a poor specimen of humanity. He was, however, very friendly, and is perhaps not so bad as he is painted.

I started again on September 11, the water being very shallow, and the breeze coming over the reeds sounded like an angry sea. Away to the north-east and south stretched a vast expanse of reeds, and to the north there was a line of blue hills, evidently the boundary of the lake. After some difficulty, we landed on an island among the reeds, the happy possessor of a really fine tree, and here we encamped. This island, called Kohoto, is only about 250 yards long by 30 broad. The line of hills, one unbroken semicircle, stretches away to north and south, about 5 miles distant. It was, however, quite impossible to get through the marsh to them.

At 5 a.m. on September 10, one of my Atonga came to say that a couple of lechwe antelope were feeding in the marsh to the north-east. In I went, the water feeling icy cold, and we kept as low in the water as we could, to hide ourselves. I returned to camp with both; unfortunately, two does. We then started, paddling along the lanes of open water in the reeds, passing a long msitu or clump of trees, which the natives say lies opposite the mouth of the Luena, at the end of the lake. We continued to traverse a sea of reeds, getting glimpses of the open water about a mile to the south; and at 3 p.m. we emerged opposite to what appeared to be a spit of land running out from the mainland, about 2 miles distant. At 4.20 p.m. we landed on it, finding it to be of sand and well wooded. To the west of this spit there was a beautifully calm bit of water called Chilipa, and beyond were miles of marsh and high papyrus reeds. A broad belt of reeds separated Chilipa from the open water of Bangweolo. Great numbers of whistling teal frequent this northern shore, but they were most extraordinarily wild. They are most beautifully marked little birds, the colouring of their plumage being perfectly lovely—gold, green, black, white, and chocolate, shining like enamel in the sun. While my men were pitching the camp, I went to explore, and found that the supposed spit was an island. The north point is about 1½ mile from the shore, where the hills come down close to the lake. At their base there is a sweep of golden sea-beach, both hills and country at their base being well wooded. The island is called Ivula.

At 8 a.m. on September 13 we left Ivula island, and met with a strong breeze and choppy sea, which threatened to swamp the small groggy canoes. We passed another long island called Chimbo, some hills appearing beyond. We were now at the north-north-west corner of the lake, and could see the coast, with its blue line of hills, sweeping away round to the south as far as the eye could reach. At the north-north-west corner there was a mass of huge reeds, which was pointed out to me as the mouth of the Lipososi river. Passing this mouth, we landed and encamped at a nicely shaded spot. From this place I made an excursion with the canoes after antelope, getting a fine view of the vast swamps from the top of a rise where I landed. Trudging through

deep white sand, we at last sighted a herd of *lechwe* antelope about a mile distant. To our right were some pools literally swarming with Zambezi geese, duck, teal, and black ibis. I was obliged to leave them in peace, for the sound of a shot would have put the herd of lechwe to flight. I made my way towards them across a swamp, but there was not an inch of cover, the reeds all lying flat. The water was waist-deep, brown, and smelly. When within 600 yards, they started off at a canter, and were soon mere specks in the distance, going northwards. Returning, I regretted every step I had taken, and my feet stirred up the black mud, causing myriads of little bubbles to rise to the surface and burst, giving forth an abominable stench. The sun, too, was glowing



LADIES AT CHIENJE.

like a furnace. When I reached the land I was a wreck, soaked from head to foot in smelly water; and as regards temper—well, I was not pleased. However, I got back to camp, and whilst having a clean, the chief N'sombo was announced—an oldish man, lean and quiet, and blind of one eye. I made the latitude of my camp by * Vega, 10° 32′ 24″ S.

On the 15th I went across to Chimbo island after hippo, but failed to get a shot. They are exceedingly scarce, being eternally hunted by the lake-dwellers. I only came across them at two places, the south point of Kisi and Chindo.

On the 16th we started again, the coast being very pretty, the hills coming down to the water's edge, well wooded with stunted shady trees,

a narrow belt of short reed fringing the water close in shore. In the afternoon we encamped on a sand-knoll, 30 feet above the lake, whence I could see the trees of Kisi, blurred in the heat-haze. We were on a narrow peninsula, stretching as far as I could see north and south, and on the west side of it there was a sheet of water, partly filled with reeds, and about 3 miles in width. The peninsula is called Lifungi, and the sheet of water Chifumauli. It extends the whole length of Bangweolo north and south, always separated throughout its entire length—some 30 or 40 miles—from the lake by the Lifungi isthmus. Latitude of the camp by * Vega, 10° 44′ 54″ S.

I had the *Vigilant* and canoes dragged across the isthmus into Chifumauli, about two hours' hard work. Lifungi is from 400 to 600 yards wide, all hill and valley, formed of white sand. The water of Chifumauli was sapphire-blue, the beauty being enhanced by beds of yellow-green reeds. The heat was very great—100° in my tent. From the shore of Lifungi I was looking at the water of Chifumauli, when, about 500 yards off, a huge black head, like that of an enormous snake, rose out of the water. I was looking through my glasses at the time, and it was with great difficulty I could keep them on the reptile, at the pace it was travelling. It would dive and come up fifty or a hundred yards from where it disappeared, travelling at an incredible pace under water. The natives said it was a *nsoto* (python) after fish. If I come across another, I hope it will not be whilst bathing. I spent the whole of the afternoon of the 18th after butterflies.

Continuing the voyage on the 19th, we passed along a very fertile-looking country, well wooded and cultivated, with many villages, a low line of hills giving way to very steep cliffs of red soil about 20 feet high. Arriving under a village perched above us, called Kalaso, we ran the boat on shore, and climbed to the top by a steep path, where we camped.

On the 21st we again started along high precipitous cliffs of a light red, covered with dense foliage, with many bomas and villages looking out over the unruffled surface of the lake, like a sea of glass. Eleven and a half feet was the greatest depth I obtained sounding, which I did frequently. At last the high steep bank gave place to low land, thickly wooded, the shore scolloped out into numbers of little bays with rocky points. This part of the coast was very thickly populated.

On the 22nd we reached the southern extreme of Chifumauli, and dragged the *Vigilant* and canoes back into the lake. Lifungi is almost entirely wooded with the muntufita, which gives delightful shade, is very picturesque, but does not appear to be used for any special purpose by the natives. There are also the mulama si chanchi (or mukovi), which exudes beautiful crystal-clear gum, very soothing to the throat, and with a pleasant taste; and the tumiowa tree, which gives good shade when fully grown, and possesses a round hard-shelled edible fruit, green when unripe and gold when ripe. This fruit has always been a

perfect godsend to me, who love anything in the shape of a ball to play with. It has enlivened many an otherwise tedious hour—shooting at them with the rook rifle, when swinging by a string or balanced on the top of a reed; or playing at catch-ball with my boys. The temptation to pluck those hard green or yellow balls, which grow in hundreds on each tree, from the size of a tennis to a cricket ball, and as round as either, and shy them at something or some one, is perfectly irresistible. Their weight, especially the green ones, is perfect for throwing. I have seen many an apple fight, and have had ample opportunities of testing their hardness on different parts of my person, but for force on impact commend me to the fruit of the tumiowa tree.

But this is a digression. We were now near the headquarters camp whence I had started. At 1 p.m. we set out for home, the pace of the *Vigilant* being about 4 miles an hour. The prevailing wind of Bangweolo is from the east. In spite of the vast marshes surrounding this lake, and the constant visits of Arabs in past years, no rice is grown. There is cotton everywhere, but not in any large quantity, and the bark-cloth tree abounds.

At four we paddled in to the shore beneath the camp, amid a scene of the wildest enthusiasm and excitement. When I first saw the men, they were drawn up in two long lines, on either side of a broad road they had made from the camp to the lake, and the drums were beating merrily. Arriving fairly close, a man here and there would rush out of the line, and, after executing a dance, would return to his place. As soon as the *Vigilant's* bow touched the shore, all discipline was thrown to the winds. The crowd rushed down in a great wave, shouting and dancing. They surrounded the boat, and all endeavoured to seize my outstretched hands. I could not utter a word to save my life. From the boat to the sand my legs and arms were being caressed by scores of black hands, all anxious to touch me or something belonging to me.

I found that during my absence they had made a most excellent square boma on the site I had originally marked out. The huts all had mud floors and raised beds. Mine looked delightfully cool and clean. I told the men I was exceedingly pleased with their work, and with the way they had behaved themselves during my absence.

There was a huge gathering of natives from all round the district to welcome me back. This completes my account of the circumnavigation of Bangweolo and Chifumauli.

After the reading of the paper, the following discussion took place:—

Mr. ALFRED SHARPE: I am sure we have all listened with very much interest and pleasure to the paper which has just been read by the President, and which he has compiled from letters written by Mr. Poulett Weatherley. It has a special interest for myself, as I have travelled through a portion of the country described, viz. the Mweru district. With regard to the name "Bangweolo," I must confess I have always felt somewhat sceptical. As the President has said, I have

always believed the name to be simply "Pa-mwelo," which means "at the lake." In, at any rate, this part of Africa, there is no special name for any lake. "Tanganyika" does not really mean any particular lake, but simply a large piece of water. "Nyassa," "Nyanza," and others are the same. I cannot call to mind any lake that has a really distinctive name of its own. I am sure we cannot have listened to this paper without feeling that Mr. Weatherley possesses qualities necessary for successful travel in the regions he has described, patience, perseverance, sympathy with the natives, and consideration for their feelings. I know, from what I have experienced myself, that without some measure of these no one can travel successfully in Africa; but with an abundant supply of them, I believe that one can travel from north to south of the African continent. There is one point I should much like to allude to to-night, which has not been spoken of in the paper read. Mr. Weatherley visited the spot where Livingstone died. He was not the first to visit that spot since Livingstone's death. The first man who went there was Henry Glave, who crossed Africa and died on the West Coast. After him came Mr. Weatherley. Since then one or two others have visited the spot, the last being Mr. H. Genthe. From the accounts given by all these travellers, there is no doubt whatever that the mpundu tree, on which is the memorable inscription to Livingstone, is practically about to fall. Once that tree falls the inscription is lost for ever, because in Africa dead wood is destroyed almost immediately by white ants. That being the case, I should like to suggest that the Royal Geographical Society take steps to have cut out of the tree the section which contains the complete inscription, and that it should be sent home and placed among the other relics which the Royal Geographical Society possesses. It would not only be an interesting reminder of Livingstone, and the great work that he has done in Africa, but it would also be some evidence of what African natives can do; it would be a record of the love and regard which they must have had for Livingstone, when they carried him so many miles, and brought him to Kabenda, where he died. Should anything be done to carry out this suggestion, I may say that I am returning to Africa in a few months, and should be happy to aid in any way I can to carry out such plans.

The PRESIDENT: Perhaps Mr. Sweet, who is the friend of Mr. Weatherley, and sent him out his steel boat, the *Vigilant*, may be induced to give us the interesting little incident concerning the smelling-salts.

Mr. LESLIE SWEET: I expect the President could tell the story better than myself. It was on one of Mr. Weatherley's previous journeys in Central Africa that he was attacked by a hostile tribe, and he and his followers practically lost everything that they had got. Mr. Weatherley only just escaped with his life, and wandered about for some time with nine or a dozen of his followers. Ultimately he came to a settlement, where he was received in a very unfriendly spirit. But he happened, luckily, to have with him a small bottle of smelling-salts, and by means of this bottle he kept his followers and himself in food for a week or ten days. The natives would come to him for a sniff of the bottle; they seem to have considered it a charm of some kind, and for each sniff they had to pay a certain amount of food. That is the history of the bottle of smelling salts.

Sir HENRY H. HOWORTH: I did not come here this evening with the intention of speaking—indeed, I am hardly prepared to deal with the subject of the paper; but a remark made by my friend on the left (Mr. Sharpe) has tempted me to add a slight suggestion. It has always struck me that those who travel so much in Africa, and explore so many parts of the country, ought to do a little more than they do to try and bring us more knowledge of, and make more interesting to us, old African history. Then we are told that the inscription on this famous tree is

in danger of being destroyed, and that it should be removed and brought back to England and made a record in this Society. I think the Society would do well, also, to try and get the inscription replaced somewhere in the old ground. It would be very interesting to all visitors to the spot in days to come, and would form evidence of the history with which the spot is associated. We in this country are very much in want of a knowledge of the real history of Africa. We who are much interested in the ethnology of Africa are terribly puzzled by the want of real records.

And now may I digress for a moment to say, Mr. President, how pleased we all of us are to see you here again in your place looking so well, and to hear again that vigorous voice that we all like so much to hear? It pleases us all to see you again in good health. And now let me go back to what I was saying. In the old days when we were all children, we used to read the 'Arabian Nights' with the greatest delight, and especially the story of Sinbad the Sailor, which occurs in the 'Arabian Nights,' and occurs also as a separate Arabic book altogether. It is a wonderful and interesting book, because it is a narrative—an account and a description of the travels of the old Arabs in the time of Haroun-Alraschid. It was upon the shores of some of these African lakes and on parts of the eastern coast of Africa whence the Arabs drew most of their slaves. They travelled from the coast of the Mediterranean right down to the Zambezi, and they seem to have gone across country as far as these lakes. We have really a great deal more information about these Arabs and their travels than most people suppose, and I think it would be an important and interesting thing for a rich body like the Royal Geographical Society to make a collection of the old Arabic accounts of the different parts of Africa which have been explored by Englishmen. There are some wonderful stories about all this coast, and some of the old African slave-dealers went further inland from the coast than some of us now suppose. All down this coast we find a peculiar dialect, which is really a mixture of the old Arabic with the old native languages. I have recently been staying in a country house with a gentleman who has spent twenty-five years on the East Coast of Africa, and has gone up to these lakes frequently, and he tells me that in nearly all the huts of the natives can be seen some memorials of the old Arabian traders in these parts. I think he can date the voyages of many of these Arab traders by the remains we have now left, which are in the hands of the chiefs. There are to be seen some very curious old pieces of Chinese porcelain, which were brought over in the tenth or twelfth century by these Arabian traders. Of these Sir John Kirk has made a curious collection, hardly any of them being later than the twelfth or thirteenth century, when the Arabs ceased to have the command of the Indian ocean. From what I have said, it would appear that it would be undoubtedly most interesting for this Society to make a collection of the Arabian accounts of the eastern parts of Africa, and especially of the country reaching up to the lakes. I have felt very much that we are apt to forget the human interest that attaches to these districts. There is a famous old Arab writer who wrote a history of Egypt, and gave a very extraordinary account of the migration of the Zulus (?) from a country much further to the north. It is so detailed and interesting a work, with such graphic narratives, that I think it would be well worth our while to get together the whole of the stories as told by these Arabs. They would certainly help our own explorers in their discoveries in these regions of Africa. We have had a wonderfully graphic account in this paper to-night, but I do think it would be interesting if we could make a little headway into the earlier history of this great continent, which really enshrines the first phases of all human history, for all the earlier history of the white people, the brown people, and the olive-coloured

people is derived from the black races. Traces of this can easily be found down this coast and partly across the whole continent, and through the Sudan and part of Egypt. I do feel that the human element is often a little too much forgotten. I am sure we are all very grateful to Mr. Weatherley for the most interesting paper he has given us to-night.

The PRESIDENT: I shall have great pleasure in bringing to the notice of the Council Mr. Sharpe's interesting suggestion and Sir Henry Howorth's very supplementary remarks. I think we must have been all struck by the pre-eminent fitness of Mr. Weatherley for the work he undertook. First of all, I think we admire his kindness to the natives, his warm sympathy with them, and his keen anxiety for their welfare. We have also been equally struck by his perseverance. This perseverance is especially exemplified by the trouble he took with his observations, when he found himself without any quicksilver, and had to use a looking-glass levelled with shot. That was an operation that would require more patience than any other that, I think, we can imagine. It may appear to be a very small thing, but it is one among many proofs of his perseverance. He was absolutely fearless, warm-hearted and kind to the natives, and he possesses most remarkable determination. We and all the Fellows of this Society are very pleased to reflect that the Council selected Mr. Weatherley for the grant of one of our awards this year, for his eminent services in the exploration of Lake Bangweolo. For when we ask Mr. Sweet to convey to Mr. Weatherley the cordial thanks of this meeting for the interesting paper he has forwarded to us, and for his most valuable collection of photographs, I hope it may be some comfort to him in his loneliness to know that he is not forgotten by the Fellows of this Society, and that we take the first opportunity of recognizing his valuable geographical researches.

THROUGH TIBET TO CHINA.*

By Captain M. S. WELLBY, 18th Hussars.

BEFORE telling of our journey, that is, of the journey that Mr. Malcolm, of the 93rd Highlanders, and I made together, in 1896, it will perhaps be well to compare our routes with those of other travellers. Colonel Prjevalsky had attempted to reach Lhasa, starting from the Tsaidam. Bower started from the west, at the pass Lanak La, and at once struck a direction south-east to Tengri Nor. Two years before this, in 1889, Prince Henry of Orleans and Bonvalot made a journey from Lob Nor to Tengri Nor. In 1894, the Littledales made their famous journey, starting from Cherchen, arrived within 50 miles of Lhasa. Rockhill's wanderings had been restricted to Eastern Tibet. Thus it will be seen that none had attempted Northern Tibet; it had only been crossed in the eastern portions, and there lay several hundred miles absolutely unexplored.

Our main object was to traverse this unknown land, and to try and discover what lay beneath that mysterious word, "unexplored." We also announced that we were bent on finding the source of the Chu

* Read at the Royal Geographical Society, June 9, 1898. Map, p. 336.

Ma river, a tributary of the Yangtse. Throughout the journey across this land we generally followed valleys, nullahs, and dry beds of rivers. After marching some 120 miles from Lanak La, we saw immense snow-ranges, running east and west, both north and south of us. The north range was particularly conspicuous, with an abrupt massive peak. Our maps will describe the country best, but it may be as well to mention the fine snow-peaks that lay some 20 or 30 miles north of us when on the banks of the river Chu Ma. For four months we saw no vegetation higher than an onion, and for nearly four months we were at an average height of 16,000 feet. For more than fourteen weeks we were without seeing any sign of mankind, and should have been a deal longer, had we not providentially met a Tibetan caravan travelling at right angles to our route, on their way from Lhasa to China. The distance we covered from Leh to the Chinese frontier town of Tankar was very nearly 2000 miles; it took us nearly five and a half months.

We made our start from Leh, the capital of Ladakh, where we spent a week or so collecting our caravan, receiving every assistance from Bishan Das, the Wazir of Leh, and from Captain Chenevix-Trench, the Resident at Srinagar. At this time of the year, namely, the end of March, men and animals are scarce in Leh, for the season is not sufficiently far advanced to allow of merchants journeying in from the north. Leh itself was comparatively empty. By a stroke of good fortune, a certain merchant had lately arrived from Lhasa, and from him we purchased the nucleus of our transport.

Our caravan, when completed, consisted of twenty-two mules and seventeen ponies. Some of these latter were in very poor condition, while the former had no cause to boast of their appearance. They carried 28 maunds of bhoussa (or over 200 lbs.), or chopped straw, and 18 maunds (over 1200 lbs.) of grain, and four and a half months' rations for all our men. In Leh three distinct kinds of mules are obtainable, namely, Yarkandis, Ladakhis, and Lhasa or Chang Tanis; of these, the former are by far the most taking in appearance, and are mostly very big, standing 14.2 to 15 hands. They are, however, unfitted for a long journey, when grass is likely to be scarce, and only a limited quantity of grain can be carried. The majority of these mules are black in colour. The Ladakhi mules are mostly brown; they are generally extremely hardy, able to stand great cold, and to do a lot of work on inferior food. Unfortunately they are hard to obtain, as only a very small number are bred, and some are too small to be of much good. The best of all are the Chang Tanis, bought in Leh; the very fact of their being there shows that they have been able to perform a long march with loads on their backs. They require little or no grain, and are very hardy. Yarkandi merchants, as a rule, give their mules loads of 200 lbs. to 240 lbs., and about 4 lbs. of grain daily; the Lhasa merchants put about 160 lbs. on their backs, and when grass is plentiful, give no grain.

Our followers were composed of six Argoons and two Yarkandis as drivers; an Argoon cook called Lassoo; and a Ladakhi servant called Esa Tsareng, which we simplified into "Esau;" and lastly our sub-surveyor, Duffadar Shahzad Mir XI. B.L., who throughout worked with the plane-table most perseveringly, while we took the latitudes and heights. There was also with us my little fox-terrier Ruby. Even in Leh we could place but little faith in our men; but as no others were forthcoming, we were entirely in their power, and could only induce them to start at all by humouring them in every way and complying to all they asked for.

Without doubt we were starting too early in the year, for most of the passes were closed by snow; yet it must be remembered that a late start may result in winter setting in before the plateau is crossed. For this reason we could not take the direct route across the pass Chang La to Lanak La, where we wished to cross the frontier. In fact, the only way open to us lay in working our way round to Shushal, on the Pangong lake. This road we took. I shall never forget the day of departure from Leh. As soon as the signal was given for the gates of the serai to be opened, the loaded mules and ponies, who had done nothing but eating for the last few days, with one accord rushed down the main street of Leh. Some took advantage of open doors and went inside, others discarded their loads altogether, while men, women, children, and dogs all joined in the general uproar. A short way from the town the road makes a sudden dip, and here the crowd of friends and relatives of our men, not relishing the return journey, bid their last farewell amidst much weeping, whilst the more generous-hearted of the muleteers scattered small change amongst the young fry.

At Shushal, where we completed our stores of bhoussa and grain, our difficulties began. No one could, or rather would, tell us of a road running eastward. The direct route over the Marsemik La into Chang Chemmo was closed by snow; but, looking at the map, it appeared that still two other routes remained—one by the northern and one by the southern extremity of the lake. We knew quite well that the southern course would be impossible, for the strong guard maintained at Rudok were certain to turn us back for good and for all. It did, however, look feasible to find a crossing between the two lakes. We sent Esau with another man, mounted on ponies, to find this out; but they were soon stopped by a strong armed party from Rudok, who were well acquainted with our every movement, and fully determined to oppose any attempt in that quarter. We therefore adopted the only course left, and marched northwards along the shores of the lake to Lukung. From here we found the only route open was one to a place called Niagzu. A journey with two passes and of three days without water. It was a cruel beginning to contemplate for our mules, but with the help of hired yak we accomplished it without mishap. Niagzu is looked upon by

Tibetans as a boundary-mark between Ladakh and Tibet. It is a snug spot, with a fresh rivulet and thick brushwood abounding in hares, while antelope and kiang (wild donkey) resided in some of the adjacent valleys. This brushwood was the last we should set eyes on for four months. Thence we journeyed on eastwards for some days to Lake Treb, with a guide to show us the way. This lake is of a beautiful blue, and saltish. Ladakhis come as far as this to collect the salt, of which there is abundance, and Tibetans take their ponies to drink the water for its medicinal qualities. The lake shows signs of having considerably dried up as years go by, for the banks sloped down in terraces to the water's edge. This I believe to be the case with many lakes in Tibet.

Lake Treb lies at the foot of a pass called the Napu La, which we made out to be 19,300 feet high, water boiling at a temperature of 179°, with temperature at 40·6 Fahr. at the summit. The crossing of it is a stiff climb for loaded animals, and would be altogether impassable after heavy snow. On descending the other side we found a fine glacier, and camped at the foot of it. At this point our hired transport left us to return to Lukung, and afterwards we only had ourselves to depend upon. We found a broad well-watered valley running east, while on either hand were occasional grassy nullahs, wherein dwelt goa and antelope, and numbers of ovis ammon heads lay about. As we marched down this valley we overtook two or three Tibetans, and, having won their friendship by means of small presents, persuaded them to act as guides. They informed us that if we continued down the valley, we should enter a district called Rundore, and there meet with opposition. They were astonished to find we had come so far without encountering anybody, and only accounted for it by saying that many Rundore men had been summoned to Rudok to strengthen that post, for news had reached them of a strong expedition setting out from Leh in that direction. Nevertheless, they agreed to take us up another valley running northwards, called Kerambutabuk, and thence east as far as the Mangtzatso, and so avoid all collision with the Rundore men. This strategic movement was doomed to failure, for at our first night's encampment we were visited by some Rundore officials with an armed following.

These men were at first bent on opposing us, but finally gave way to persuasion, and just as we were congratulating ourselves upon our good fortune, another strong party of officials from Rudok rode in, in hot haste, determined to stop us. Bribes, threats, and arguments were of no avail. They insisted upon our returning by the way we had come. Throughout the night fresh arrivals continued to pour in, and the jingling of the bells on the ponies' necks proclaimed at what a rapid rate they rode. At daybreak we found quite a big gathering, armed with spears and matchlocks. In an ostentatious way we loaded our mules and our guns, and, distributing them to our followers, endeavoured to get past. But the Tibetans, whose actions and feelings were those of

fanatics, were not to be so taken in. Back we had to go, and, without hired transport, to recross the Napu La, back to our old friend, Lake Treb. At the corner of the Kerambutabuk nullah where it joins the main Rundore nullah, was a small nomad encampment called Kerinagar. These people lived in some very dirty and dilapidated old tents, and possessed a little grain and a few sheep. Close by was a hill called Chotenchenbo, conspicuous amongst a chain of others. The hill is probably volcanic, as these nomads informed us that every month much noise was emitted from the summit, which has so worked upon their imaginations that they hold it in the deepest veneration, and on the 15th day of each month, numbers of people from the surrounding district come to worship and propitiate the spirit of the mountain.

From Lake Treb we travelled north to the east side of the pass Lanak La. Since leaving Leh we had traversed 397 miles, had lost two ponies from exhaustion, and all our sheep but one, yet we had only just reached the border of Tibet. This solitary sheep marched for several weeks to come, and very often, when game was scarce, his life was in jeopardy; he was friends with everybody. One day, however, he had to be killed to supply mutton broth for one of the men who was seriously ill. But, owing to his daily tramp, the flesh, we agreed, was the hardest and toughest we had ever tried to eat, and I am sorry to say the mutton broth possessed so little sustenance that the poor man died. But here we received an addition to our party, in the shape of Ruby's litter of three pups. Our men, too, at this spot, were exhibiting a grumbling spirit, and were hinting at turning back; fortunately, Malcolm shot a yak, and their minds, for the time being, were fully occupied in cooking and eating an enormous amount of flesh.

On May 31 we at last launched forth over northern and unexplored Tibet, which is known as the Chang. We had hoped to find either Bower's route or the Polu road before taking our own course, but our reconnoitring availed us nothing, so we resolved to strike a road for ourselves. We decided, whenever possible, to march due east, and when in doubt to travel north rather than south. We started over an easy pass, and on the other side found a broad valley running east, and camped in it the same evening, by two small pools of fresh water, though there was next to no grazing. Throughout the night a violent storm raged. We could hear our mules entangled in the guy-ropes of our tent in their eagerness for shelter, and every moment we expected to be buried in snow and canvas. On rising at daybreak, a death-like silence prevailed, so still it seemed after the previous night. Stepping outside, I found all was clothed in snow. The men were quiet in their tents, and some of the mules stood with drooping heads, and others lay outstretched; but, on counting them over, several were deficient, and the poor fellow who had nearly brought the tent down on our heads lay stiff and dead. I woke up the camp, and, selecting our best men

and ponies, sent them off to track the strayers before the snow melted.

I will now pass more quickly over the next two months. Throughout the month of June we continued to travel eastwards. Our animals died at an alarming rate, so that Malcolm and I had to give up all idea of riding. Generally speaking, our route lay along broad open valleys some 16000 feet high, and after every four or five days, we would cross an easy pass into another wide valley. It was clear that the range of mountains ran east and west, and it struck me that the difficulties of travelling north and south must be great. The land abounded in salt lakes and salt districts, making fresh water very scarce; in fact, almost daily we had to dig some feet deep, before we could hope to find any. This want, added to the scantiness of the vegetation, told severely on our animals. By June 22 twenty-three of them had died, and some of the remaining sixteen were in a very weak condition; yet, since leaving Lanak La we had not come 200 miles. In some places we found grass just beginning to sprout, showing the advantage to be gained of making a later start in the season, if possible. In others we found "boortsa" growing, a kind of heather. In this there is certainly a great deal of nourishment and saline moisture. Most of the animals generally preferred it to grass, and required less water when it was plentiful. Our ponies gave way before the mules.

On June 9 we camped on the banks of a fresh-water lake, frozen over. As we had to lighten our loads here by leaving goods behind, we christened the lake, Lake Lighten. On June 18 (camp 32, height over 16,000 feet), we found a small white butterfly. At these high altitudes, it was astonishing to find the thermometer registering as much as 110° Fahr. in the sun, while at night-time there were sometimes 25° of frost. Very soon after sunrise the heat became most oppressive for the mules and ponies, and, in order to husband their strength, we used to rise at 3.30 a.m., and march half a dozen miles, and again make a second march in the cool of the afternoon. During this month game was scarce, but towards July things began to improve. Game became more plentiful, especially yak, some of which, on one occasion, were even grazing with our own mules. Salt lakes became rarer, there was better grazing, and we were able to add to our collection of flowers. On July 12 (camp 52), we saw eagles and wild dogs. On July 19 (camp 59), a week later, we found a brown butterfly.

On July 22, just after leaving camp 63, we crossed a narrow track running at right angles to our route; this was well defined, and perhaps a road to Lhasa. On the track, one of our men picked up the entire leg-bone of a pack-animal, showing clearly that a merchant or traveller must at some time or other have used the track, for there was a shoe attached to it, and nomads do not shoe their animals. This track ran along the western edge of an ancient dry bed of a salt lake. The lake was

remarkable, for it was divided into small squares by walls of crystallized salt, 2 to 3 feet high. The salt was of excellent quality.

On July 27 (camp 68), we crossed a river, which took its rise from the hills close by. The bed of it was half a mile across, with several small streams a foot deep, and it was the largest body of running water we had met. Everywhere grew good grass, flowers, wild onions, and other vegetables—"kumbuk" and "hann." Yak and antelope were abundant.

Throughout this time we had experienced a good deal of trouble from our muleteers. We could not make them realize that our only chance of crossing this unknown land lay in taking every care of the mules. Our arguments and promises of rewards bore fruit for a few hours only; the slightest reverse would again exhibit a lazy and unwilling spirit. Besides, they quarrelled amongst themselves, chiefly, I think, over their rations. We could never trust them out of our sight. One of us would march with them, while the other reconnoitred some miles on ahead. Shahzad Mir, with his pony, was left alone to continue his surveying without interruption. On August 2 a climax was reached, when I upbraided the muleteers for their laziness. We could not induce them to rise and load their mules, and I told them that if they chose they might remain where they were, but that Malcolm and I intended to march. There and then they rose in a body, and seizing whatever they fancied, including the remaining 20 lbs. of flour and the meat, and headed by the caravan-bashi, Ghulan Rassul, marched off in a south direction. This man, who had been with Mr. Littledale on his last journey, had deluded them with the idea that he could guide them to Lhasa. Although we had been warned by the Wazir of Leh against making Ghulan Rassul our headman, still there was no other man at all fitted for the post. We now composed a small party; besides our Duffadar, there remained Lassoo and Esau, twelve animals, and Ruby. Reducing our baggage, we eventually caught the mules and loaded up, and made a long march that same day. But on the second day after this the deserters reappeared; they had had enough of finding their way to Lhasa, and were evidently not on good terms with one another. They begged us to take them on again; but this, with the exception of one man, Shukr Ali, we did not feel it our duty to do, more especially when we learnt from Shukr Ali that there had been a pre-arranged plot, even as far back as Shushal, to leave us when food ran short—furthermore, that they had planned to steal our animals at night-time, and leave us without means of transport and without food. This we had guessed, and had hidden and watched by night, and continued to do so till we knew we had shaken them off. Had we felt we could have relied upon their faithfully serving us, we would have taken them willingly, and were anxious to do so; but we could not trust them, and even now I am convinced that had we done so we should have paid heavily for it.

After this misfortune, we were lucky in finding good grass, fresh water, onions, rhubarb, and game. On August 9 I shot a somewhat remarkable animal at a height of over 16,000 feet. The skin I have here. Two young cubs we carried along with us in hopes of their eventually reaching India. All went well till August 10, when, through the exhausted state of our mules, we were forced to camp at the summit of a pass, 16,614 feet high. There was no grass, but certain hardy plants. On the following morning we were astounded to find nine of the mules were dead. Everything we could possibly do without had now to be abandoned; in fact, we only kept one tiny tent, our bedding, ammunition, and instruments, and the clothes we wore, and we left our two cubs behind with a large supply of meat. We commenced the descent of the pass a sadly reduced party, each with loads on our backs. The weather, which hitherto had been all that could be desired, became very broken, and the going was consequently very heavy; whereas latterly we had been making some 16 miles a day, we now had difficulty in covering half that distance. To add to our troubles, game was very scarce.

Since the day of this misfortune we had been gradually descending, following a small stream which daily increased in volume, and we hoped that this would eventually bring us to people. Our food was kiang and wild onions when we could find any. For ten days we stuck to the stream, crossing and recrossing, when sometimes the three mules would collapse midstream, which flowed fast and cold and about 3 feet deep. At length, on August 22, we found ourselves on the shores of a magnificent fresh-water lake. Everywhere grew rich green grass. On the north side of the lake, along which our path lay, rose grassy hills teeming with wild yak and kiang; above and beyond these were snow-capped ranges. On the south side a vast plain stretched far away to distant mountains. Around the edges of the lake lay perfect skeletons of scores of dead yak. All seemed to choose the shores of this wonderful lake to die by. Flowers, water-fowl, and hares were plentiful. The shore was sandy, with rocks around, reminding one vividly of an inlet sea. It was indeed an artist's and a sportsman's paradise. The lake was about 23 miles long and 4 miles broad in places. At 7 p.m., although nearly 16,000 feet above the sea-level, the temperature registered nearly 50° Fahr.; during the night it only just froze. At the east end of this lake were some sandy hillocks, and a trickling stream took its rise from the adjacent hills. As this stream ran in an easterly direction, we resolved to follow it up in hopes it would bring us to people. Each day the stream increased in volume, so that we dared not cross it. At that time we had even run out of salt, and when we shot a yak, we used to boil down its fat into cakes, and munch it like Everton toffee.

On the 12th day, after we had followed the stream for 120 miles, we providentially fell in with a large caravan of Tibetan merchants. They

were travelling at right angles to our route, and were on their way from Lhasa to Tankar, situated on the borders of China. Since leaving Lanak La we had been marching for fourteen weeks, and had traversed very nearly 1000 miles, without seeing a sign of mankind. This caravan had been two and a half months on the road, and expected to reach Barong, in the Tsaidam, in about another month. From them we learnt that the river we had followed was no other than the Chuwa, whose very source we had found. They told us that it flowed through the Golok country, thence on to Tachien-lu, into the Yangtse. This probably flows to Batang, as there is no big river at Tachien-lu. Merchants going by the eastern route would pass through Batang and then Tachien-lu.

A few words about this Tibetan caravan may be of interest. The head of the caravan was a very fine-looking Tibetan from Lhasa, standing over 6 feet high, and always known as the "Kushok." The title "Kushok" was originally applied to living Buddhas, but latterly it has become merely a term of respect or affection, and no longer has any religious significance. Next to him was another important merchant, who shared his tent; then there were several minor ones, who owned perhaps only a few yak; besides these was a lama, or priest, and herdsmen, cooks, and servants, all mounted. There were some 1500 yak and 300 ponies, and altogether they made up an imposing caravan. The fifteen hundred yak were divided into seven distinct companies, moving off in column; and these seven were again divided into two wings. They always marched off in the same order, without the slightest noise or confusion. The yak were always loaded in the dark, and they moved off before sunrise, and although we used to pitch our tent next to the Kushoks, they used to march off without even waking us. By marching after them, we were able to carry out our observations and sketching without arousing suspicion. One day, the Kushok, seeing Shahzad Mir coming in last, carrying the plane-table, asked, "What offence has this man done, that he merits this daily punishment?" He fancied we had adopted some variation of the Chinese infliction of wearing the wooden collar, known as the "canque." No food was eaten in the camp till after the march and after unloading. If there was one thing more than another which aroused our wonder in connection with the caravan, it was the extraordinary knowledge the Kushok had of every little thing that went on. Outwardly he appeared to take scarcely any interest in anything. He rarely came outside his tent, and seemed to spend most of his time in drinking tea and praying.

The Lhasa-Sining route, along which we were now travelling, is no regularly defined road, but every year the caravans renew various old landmarks, and set up new ones on prominent places, generally to denote the camping-grounds. It may sometimes occur that no caravan has done the journey for two or three years, and if the landmarks are not carefully kept up, there might be great difficulty in finding grass and water. For this

reason their marches vary in length, from a few miles to 30 a day. One caravan only leaves from each end every year. The annual tribute from Lhasa to the Chinese Emperor does not travel by this road, but by Labrang. They usually start in May, taking about five months on the journey. A caravan from Lhasa to China brings the famous pulo cloth, and great quantities of dried dates (kasur). These come into Lhasa from Calcutta, so that by the time they reach China they are naturally very expensive, almost a penny each in English money.

Caravans from China to Lhasa are mostly employed carrying tea, the main staple of food in Tibet, and some tobacco. The reason why only one caravan goes each year is, that all the merchants are very much afraid of encountering robbers on the road. Very often these large caravans are employed trading for the Talè Lama or other high officials in Lhasa, but whether this is invariably the case, or whether on this occasion, I am unable to say. In matters of business, as well as of geography, the Kushok and his servants were very reticent after the first day or two. At first he used to invite us to tea in his tent, but afterwards we had to pay a rupee for this luxury. The Kushok did impress upon us that the determination to prevent foreigners entering Lhasa was greater than ever. At Tankar, the frontier town of the province of Kansu, there are four Tibetan officials appointed by the Talè Lama to look after the interests of Tibetan merchants, and to arrange any difficulties arising between them and the Chinese.

On September 14 we reached brushwood, the first since Niagzu, and camped on the right bank of the river Shugatza, or Shuga Gol, which at this point flowed through hills in a north-west direction. The river here was some 30 yards across, and from 3 to 6 feet deep, with stony bottom. On both banks was good grazing. South of us lay the Tong hills. Two days later we left the merchants under peculiar circumstances, and next morning found a hot spring bubbling up from the top of a rock standing 4 feet high in the middle of a nullah close to the Shugatza. The water was fairly hot, but tasteless, though the rock was stained a black and yellow colour. It was apparent, from the surroundings, that people frequented the spot. The following day we left the river, which flowed from a more southerly direction, while we steered for some white rocky hills at the entrance of a nullah. All the way up the nullah were skeletons of dead yak, showing what hardships some previous caravan had undergone. We also picked up a keg of opium.

After crossing the first range of hills, we came to a small hill at the entrance to another nullah; on the summit was a large pile of stones decorated with sticks and red rags. This was evidently a camping-ground. The spot is called Dapsoga, and the little hill Ser. Close to here the Namoran Gol takes its rise, and it is the junction of the two roads into the Tsaidam, one leading over the Namoran Dawan, and the

other more west, the Burhan Bota. The latter, though a little longer, is the one generally chosen, for it is more suited to laden yak, which are liable to get lost and scattered in the thick bush over the former.

On September 21, camp 122, on the banks of the Namoran Gol, we found brushwood 8 feet high, and afterwards wild currants and other berries, which Ruby ate voraciously. We also came to a stone building, 12 feet square, wherein was a huge prayer-wheel, for ever being turned by the force of water. Hanging about on the bushes were numbers of prayers on linen, the largest one of which I seized and have here. Close by Malcolm shot a bear (*Ursus pruinosus*). After crossing these ranges, we entered a desert plain, till eventually, in a desperately hungry condition, we fell in with Mongols, the Tsokpo or Sokpor Mongols, who were living with their flocks in the bush. At this place the Namoran Gol splits up into several small streams, and there is good grazing and thick bush. We journeyed two days east with these Mongols, to their tents on the banks of the Bayan Gol. On the way we crossed a salt district, and the river Shishi. We were now in the district of Dsun, some 10 miles north of Barong. Just south of Barong is another pass called Hato, which runs into the Lhasa road; but it is hardly used, and not a recognized road, like the two others mentioned. The climate on the Bayan Gol is, I am told, most genial all the year round, for it seldom rains or snows, though they can see it raining in the mountains around. These Mongols were most unsophisticated, and persisted in taking pinches of Cadbury's cocoa, which they maintained was snuff.

We lived with these people for three days on the river, meeting with great kindness and hospitality. We were endeavouring to persuade them to help us with ponies into Tankar, a distance of 300 miles. They told us we could get camels at Barong, but with so small a party the owners would not dare to go. They would have to pass through a district inhabited by the Bana tribes, shown in the map Banakhasum—*sum* meaning "three;" that is to say, there are three of these Bana tribes, and these again are subdivided into eighteen small tribes, each with a separate chief, the whole being under the Sining Amban, or Tsong T'u. It is through fear of these tribes that the Tsokpo Mongols so seldom make the journey to China. At length we persuaded some of them to help us, and on October 1, we left the banks of the Bayan Gol, accompanied by Lobsan, an influential Mongol, and whose real name is Dsun Choni Lama, and three other men and ten ponies. As we drew near the black tents of the Bana tribes, Lobsan and his men thought it as well to rehearse a battle by night, so that all might be prepared. Soon after sunset, big fires were made to represent a big camp, when they pretended that imaginary enemies had fallen upon us. They fired off their matchlocks, and rushed here and there, crying out, "Ho! hi! ha!" Malcolm

and I sat by a large fire of argols, warming our toes as we watched the terrible battle they were engaged in.

On the third day we hit off the main track running from Barong to Tankar, and, after crossing an easy pass, where was a stream whose water was considered poisonous, for it was never drunk by man or beast, we dropped down into the valley of Noring Gol. Here lay a salt lake, where we saw the first signs of the late Mohammedan rebellion, for there were two deserted and ruined Mongol villages, devastated by the rebels in their flight from China into Turkistan. The crests of the hills in this neighbourhood were clad with pine trees. On the sixth day of our march we hit off the Tuling Gol river, and the next day saw signs of a large encampment, where the Chinese had halted in their pursuit of the rebels. A short distance further on was the village of Selling Gompa, where I was told the French traveller, Dutreuil de Rhins, had met his untimely end.

At this spot are two roads to China: the right-hand one runs through a salt district, and, though shorter, is a rougher road, and more dangerous on account of the tribes. We chose the left-hand one, and after 10 miles came to a wonderful rock called Kanjur Rungyum, which means "Sacred writings, not built by men." On one side of the rock was a courtyard, built of big blocks of white stone, some of which were 2 feet long. On many of the stones were Chinese and a few Tibetan inscriptions. Hanging across one wall was a string with hairs from horses' tails, and bones with inscriptions on them attached to it. On entering the court-yard, we found a cave, some 30 feet high, inside the rock, and there is the entrance here of a subterranean passage, which is said to run all the way to the salt lake of Koko Nor.

Soon afterwards we crossed an easy pass, the Nicotine Kotal, to a spot called Utu by Tsokpo men, and Bara nullah by Lhasa men. There was good grass, but the mountains, except where pine-clad, were barren and rocky. Later on we crossed the river Buka,* which ran into the Koko-nor. We found the bed of the river a quarter of a mile across, the water being split up into channels some 15 yards broad. The water was 2 to 3 feet deep, and flowed over a stony bottom. This river we followed till we reached the cairn of Hatuturgy, on the west of Koko Nor. Here, on October 10, we experienced the coldest night of our journey, which we spent in the open without shelter. There were 27° of frost.

We travelled along the north edge of Koko Nor, where we overtook immense numbers of yak, laden with wool and salt, on their way to China. There was fine grass land throughout, and great numbers of black tents of the Bana tribes. While marching along the shore, we had just been able to make out the island away towards the south side, but no two men

* Buhain Gol (?).

gave the same account about the inhabitants, and travellers have varied in their accounts about it. Later on, we were able to get a reliable statement about this "Dragon Colt's island," as it is called. There are twelve or thirteen priests living there, who keep sheep and goats, and, being free from depredations of wolves, the flocks thrive well. In winter, when the lake is frozen over, they cross to the mainland and lay in stores for the summer. After crossing a pass, we followed a stream, the Hsi Ho (West river), or Ta Ho (Big river), or Chuchok by Mongols, which brought us to the frontier town of Tankar, or Donkyr as it is shown in some maps.

The town was crowded with Chinese, and a sprinkling of Mongols and Tibetans. We received every civility from the officials of the place, more especially from the colonel commanding the troops. But as all had been disbanded, it seemed strange that he should still be in command. Tankar lies in a kind of hollow, commanded from all quarters by hills and rising ground. The chief hills are Ho-la, or Ta Sand, lying north-west; and Toai Ta, or Wupu, lying south-east. From the summit of this hill, the town of Sining, 30 miles off, can be seen; and a tree is planted on the summit, as a landmark to travellers. The chief importance in Tankar consists in its being the most westerly town of the province of Kansu, and commanding the roads to Koko Nor and Lhasa. The merchandise imported there is carried further on to Lanchau and Peking, etc. At Tankar itself very little buying and selling goes on. The wool, for instance, is forwarded by a Chinese agent to Peking by camels or by raft.

Thence, under the guidance of Mr. Rijnhart, a missionary, who was living at Tankar with his wife, we rode on to the monastery at Kumbum. He had spent two years at Lusar, and ten months in the monastery itself, and had made friends with a very large number of its inmates, more especially Mina-Fuyeh, one of the greatest incarnate saints in the place, and in whose house we were to spend the night. For the first 15 li our road lay along the left bank of the Si Ho, till we crossed it by a cantilever bridge, close to the village of Hsang Ho Ri (Sounding river), where is a small inn. We then crossed the pass Wu-la, from the summit of which we were able to note the results of the recent Mohammedan rebellion. Every village that was not in ruins had loopholed walls and fighting-towers, which had been specially erected. Rich and fertile though this little bit of Kansu is, with its crops of wheat, barley, oats, millet, peas, linseed, and opium, it will be two years before it can recover from the trying times it had passed through. The moon was high in the heavens when we reached our destination. Our continual knocking at the great wooden gates of the monastery sounded loud in the still frosty night air, but at length they were opened by one of the Greek manservants, who, on seeing Mr. Rijnhart, was all civility. While word was being sent to Mina-Fuyeh, we busied ourselves with our horses, and

soon afterwards mounted the stone stairs, and, after crossing an open court, were ushered into the presence of one of the highest men in the eastern border of Tibet. On arrival at the monastery, we received every kindness from the saint Mina-Fuyeh, a man of twenty-seven years of age, and is now in his sixteenth or twenty-second lifetime. He is a man considerably below medium height and of slight build; he has a very pleasant face, especially when lit up by a happy smile, as it often is. His explanation of how he came to be recognized as the reincarnation of the previous Mina-Fuyeh, shows how convincing the proofs of identity are to one who has been brought up to accept and believe in the theory. He relates how, when very small, various articles had been laid before him, from which to select those he had used in his previous lifetime. Amongst these was a number of "rosaries," from which he had no difficulty in choosing his own. "For," he says, "I had used it daily for years. How is it possible that I should not know it amongst all these others?" So on with other articles; his identity was established without a doubt, and he became the heir to the accumulated property of fifteen former lifetimes. He talks freely of his last lifetime, pointing out the site of the house in which he lived, and which was burnt down about two years before his death. "It was," he says, "a far finer house than the one I now occupy." In Kumbum there are about seventy of these "incarnate saints," and Mina-Fuyeh ranks sixth or seventh. He was a liberal-minded man, and told us about the monastery, and told us to go wherever we chose, and take pictures of whatever we wanted.

Kumbum itself lies at the junction of two small valleys, one coming from the east, the other from the south, the buildings lying to the south of the former, while on the north is the "Precious Hill," which keeps off all evil influences. On the east side of the other valley are most of the private dwellings, while on the west are temples. Altogether, in Kumbum there are close on 4000 priests, about 70 per cent. of which are Tibetans, 20 per cent. Mongols, and the remainder Chinese. It has, I believe, been stated that Kumbum is entirely Chinese in its government and organization. That this is not the case needs no further proof than the fact that in all things temporal it is under the Tsong T'u or Prince of Koko-nor, a mandarin appointed by the emperor to govern all his Tibetan dependencies in this direction. He lives at Sining, and is known among Tibetans and Mongols as the "Seling Amban;" on the other hand, if Kumbum were really Chinese, it would be subservient to the Fu of Sining, and would be governed by the Fu T'ai. There is, moreover, a distinct boundary-line, separating the territory which comes under Fu T'ai from that which comes under the Tsong T'u; those living within the boundary paying taxes to the monastery, while those outside pay to Sining Fu.

All the private houses at Kumbum are supposed to be whitewashed annually, but, like many other things, had been neglected owing to

the rebellion. The method of whitewashing appears strange to us, for the custom is to mix the wash, then to ascend the roof and pour it down over the walls. The result is not quite satisfactory, but customs like this cannot be altered. We visited each temple and hall in succession. Perhaps the chief feature of the place is the "Gold-tiled Temple," the pride of Eastern Tibet, the sacred shrine of Tsong K'aba. At the entrance to the shrine were a few lamas *kotowing*, and the boards in front of the doorway have been worn away to the depth of 3 or 4 inches. Most of these lamas knew Mr. Rijnhart, and stopped in their devotions to speak a word of welcome to him; and one of the doorkeepers asked why we did not knock our heads before entering. To this Rijnhart replied that it would be no sign of respect on our part, as our custom was to remove our hats on entering a sacred place; nor did we ever omit to do so. The figure of Tsong K'aba is considerably above one, in a sitting position, and not easily seen in the dim religious light. It is about 8 feet high, I should say, and very richly gilt. Below and in front of him is the shrine, with the usual holy-water vases and butter lamps, with handsome gold and silver lamps on either side, and a fine pair of elephant-tusks. Next in interest to the golden image, among the relics in the temple, comes the stone on which Tsong K'aba's mother sat when delivered of her saintly son. We then ascended to the second floor, where we were on a level with the image. There was yet another story, from which we looked down on to the lower portions of the gilded roof. The priests say there is a quarter of an inch of gold over the roof, but, even deducting a great deal, it must be of immense value, and one could not help wondering how it had escaped the two rebellions in the last thirty years. One would have thought they would have risked anything to secure such loot, and to deal such a blow to the rival religion as the sacking of this temple would be.

On the right of the gold-tiled temple were two small temples of Sakya Muni. There is nothing in them peculiar, merely the ordinary ornaments and lamps; but just in one corner is the original "Sacred Tree," which sprung, according to some, from Tsong K'aba's hair, according to others, from his swaddling clothes. However this may be, the fact remains, that on its leaves a true believer can distinctly trace the figure of Sakya Muni, or his name in Tibetan characters. Some priests say that one thing is to be seen, and some another, but Mina Fuyeh says that on some leaves the figure may be seen, on others the characters. As only firm believers can trace anything, the question is likely to remain in doubt, in spite of Abbé Huc's assertion that he detected images. Mr. W. W. Rockhill states that he was informed by Mr. W. B. Hemsley that this tree is the white sandalwood.

From the public reading-hall we went into that for private reading —a fine room with rows of low forms about 6 inches high, comfortably cushioned, and big enough to hold 2500 priests. In front of this is

another courtyard, in which, we were told, it is no unusual sight to see 1200 or 1500 pairs of shoes, belonging to students inside. How any one can find his own again on coming out is a mystery.

From Lusar the road lies over an easy pass into the southern valley, which it follows right up to the western gate of the town. All the way to Sining signs of the rebellion were plentiful, just as they had been on the way from Tankar. The whole countryside had been devastated by the Mohammedans while they had had the upper hand; but at the city gate the tables were turned, for hanging in cages on the wall were the heads of the ringleaders. At the mission-house we were most hospitably received by Mr. and Mrs. Ridley, of the China Inland Mission. He kindly gave me all his notes about the rebellion, to make whatever use of I wanted. They were shut up in Sining, the very heart of the rebellion, for some months, and did much good attending to the wounded.

Although this outbreak of religious enthusiasm was of no small importance, it was drowned by the Japanese war, on which the whole attention of Europe was centred. It struck me as almost incredible that the Chinese Government, although well aware that the "Salar" Mohammedans were a most restless and fanatical sect, and also that, although the previous rebellion had only ended some twenty years ago, still at the present outbreak there were no adequate means at hand to cope with the insurgents. Consequently, the rebellion grew so rapidly that before soldiers could arrive from the seat of the Japanese war, close on 40,000 Chinese in Sining and the district had been slain, and nothing but the really splendid behaviour of the chief military official, General Teng, unsupported by trained troops, prevented the town falling into the hands of the rebels. By the time Sining was relieved the trouble had grown to such an extent that the Russians in Turkistan had begun to move troops, in anticipation of the Mohammedans following the example of their co-religionists in the East.

At Sining we hired mules and started for Lanchau, where we looked out for landmarks mentioned by previous travellers. In the first day's march there were two such landmarks, or, more correctly speaking, there should have been two; the first, 30 li from Sining, a bridge over the Hsi Ho, mentioned by Mr. Littledale; the second, another 30 li on, was the "Peh Ma Sei," or White Horse temple, mentioned by Mr. Rockhill. Unfortunately, these are now things of the past; the bridge was swept away by a flood soon after Mr. Littledale saw it, and the White Horse temple was utterly wrecked by the fanatical Mohammedans.

At Lanchau, famous for its tobacco, grown and manufactured there, kind missionaries again helped us in getting carts to take us on to Chungwei, a week's journey. This was the first town where we experienced incivility, and became well aware of the hatred of Chinese to foreigners. In these districts we found coal-mines, pewter, iron,

saltpetre, and soda; the latter is dug out and burnt all day and night in big fires of weeds to cleanse it. We also learnt, for the first time, that Mr. Littledale's remarks before the Royal Geographical Society, about sending unprotected Swedish girls to live in out-of-the-way parts of China, had given serious offence. We were assured that unmarried girls were never sent out to stations alone, but were invariably sent to live with a married couple, and every precaution taken to guard them from any danger. At the same time, there is no doubt that Mr. Littledale's intention has been misunderstood, and could this misunderstanding be cleared up, I think it would be all for the better.

From Chungwei we took a flat-bottomed wool-boat to PaoT'eo (Bautu), and thence carts to Peking, where we underwent perhaps the strangest sensation of the whole journey, when, with the grime of our eight months' travel, we suddenly found ourselves in Lady Macdonald's drawing-room. At Peking, which had taken us so long to reach, we could only dwell for three days, for the Gulf of Pechili might be frozen over at any moment. At Tientsin, on arrival at the Globe hotel, we were looked upon with the gravest suspicion, and only with the greatest difficulty did we manage to secure one small room between us. A little later, when our landlord found out who we were, he was profuse in his apologies, and anxious to put us in better quarters, explaining that he at first had taken us for robbers. This was rather hard, after having had baths regularly for the last four days, having shaved our beards, and having borrowed clothes from Mr. Hugh Grosvenor at Peking, but it made us realize what a shock we must have given Lady Macdonald on our first appearance in her drawing-room.

Without the help of my friend Malcolm, I am quite sure this journey would never have been accomplished; nor can we ever forget the valuable help afforded by Shahzad Mir, nor the ready and willing spirit with which our two servants Esau and Lassoo served us throughout. The former returned to his regiment, and the two latter to their homes in Ladakh.

Sometimes, on cold nights, when reduced to a small party, Malcolm and I used to sit with our men round the fire, and tell them of the pleasures and advantages of civilization. Esau and Lassoo had never seen a boat, and pictured to themselves a life of eating, drinking, and smoking, without work. But on realizing they learnt that civilization was not without its drawbacks, for the first day at sea the cigars we had given them lay scattered about, and they lay prone and sick, and longed to be back in the middle of Tibet by the most dreary salt lake. Like other travellers, we found it our hardest task to part with Shahzad Mir and these two men.

Before the reading of the paper, the CHAIRMAN (Lord BELHAVEN AND STENTON) said: I am sure you will be as sorry as I am that our distinguished President, Sir

Clements Markham, is unable to be present here on account of illness. I hope that it is an illness which will not last long, and I am glad to say that he is already improving. I also wish to mention that we have the pleasure of having present with us this evening Dr. Thoroddsen, who has done so much for the geography of Iceland, and who, for seventeen years, has every summer worked at the survey of the inland portion of that island, which has hitherto been unknown, and it is a great pleasure to the Society that he should be here on this occasion. I will now call upon Captain M. S. Wellby, of the 18th Hussars, to read the paper which he has kindly prepared for us on the subject of his long and interesting journey through Tibet, from west to east. I am sure that the subject is one which will interest the Society very much, the more so as the greater part of the country which he will describe has hitherto been untrodden by any European.

After the reading of the paper, the following discussion took place:—

Mr. St. G. Littledale: Listening to the account that Captain Wellby has just given us of his adventurous journey, has brought back to me very vividly our own struggles when crossing through very similar country, and I am very much impressed with his getting through at all, considering the smallness of the caravan with which he started. Where he took a hundredweight of food for his horses, we took tons, and we were in the sorriest straits, and I think it is a matter of the highest credit to him that he was able to get through at all. Comparing his route with mine, I have little doubt that the horse's leg with the shoe on which he found, was at one time my property. Had he only gone a few marches further south he would have found, I am sorry to say, very many more relics, and had he only had the luck he might have stumbled across the record yak I happened to kill one day, but had to abandon. I was prouder of that head than anything I got that trip; but unfortunately it is left for another Captain Wellby to pick up. Captain Wellby's paper was the first intimation I have ever received that the Swedish ladies had resented my remarks about them, or that they thought that what I said was casting a slight on their religion. I am very sorry that they so misunderstood my motive, which was simply to point out that I thought it was very reprehensible that these girls should have been sent out to the interior of a country like China without any married people, who knew the language and customs of the country, to look after them. So far from casting a slur on their religion, I am quite certain that the only way to get at these Chinese is by living amongst them, and that is exactly what these devoted ladies were doing. I think that what I said was not a bit too strong for the occasion, and the sentiments that I expressed were more strongly expressed by the diplomatic people in Pekin, and by the consuls on the coast; but I understand that now these Swedish girls are, a great many of them, married, and of course their husbands are in a position to look after them.

Sir Richard Strachey: I think, my lord, that the first impression that was left upon my mind by hearing Captain Wellby's account of his remarkable journey was, how easy it was to give an interesting account of so tremendous an undertaking as that which he has gone through. I speak with some knowledge of what his journey really means. It is now just fifty years ago since I made my comparatively smaller journey in Western Tibet, and the experience that I had then, satisfies me of the extreme hardships and difficulty that a journey of that sort must involve. The climate in itself is quite sufficient to try the strongest constitution of the most resolute man. The account that Captain Wellby has given of the destruction that fell upon the whole of the animals that he took with him, and brought him to what was nothing less than great peril of his life, is one of those things you may talk about, but unless you have gone through it you cannot appreciate. When I first became acquainted with Tibet—as I say, just fifty years ago—

although I was not actually the first of English travellers in that remarkable country, I was amongst the first. At that time literally nothing was properly known, not only of Tibet, but of that great range of country which may be called Central Asia, which extends across the great plateau which lies between the northern boundary of Tibet and the southern mountains of Siberia. The only sort of knowledge one then had of the country was to be found in Humboldt's remarkable researches collected in his famous book 'Asie Centrale,' but it was founded, to a great extent, upon the reports of native travellers, and it was extremely imperfect. Now, during these fifty years, the whole of that great region—I don't say in detail, but the main features of it—has been made entirely known to us. Tibet itself, that most inhospitable of countries, has been traversed, more or less thoroughly, in all directions, and, geographically, this journey of Captain Wellby is very important and very satisfactory, because it gives us now a definite and absolute knowledge of the features of the country all along the 35th parallel of latitude, and we are able to say that they are virtually uniform throughout. The lowest part of the country through which the journey was made would be possibly 15,000 feet above the level of the sea, and the mountains rise to 19,000 or 22,000, and probably in some places even higher. It is a country which, although at so great a height, is during a great part of the year practically snowless. No doubt in the winter snow is there, but the fact seems to be that in the summer months it is almost as difficult to find snow on the surface generally as it would be in the hottest of the plains of India. The extreme power of the rays of the sun, of which Captain Wellby has spoken, which makes the climate so extremely trying, is due to the great rarefaction of the air and the great clearness of the sky. In the summer months, the great heat during the day, combined with the great cold at night—the cold arising practically from the same causes that give such great intensity to the power of the sun—make a climate which is thoroughly detestable. All I can say of Tibet is: Let no one go into the country who has not some specific object in view, either, as it may be, to get a wild camel or a wild yak, or for the purpose of geographical exploration. The feeling I had on my return was, that I was very glad I had been there, but I never wished to go again.

The CHAIRMAN: It is my pleasing duty to congratulate Captain Wellby on his very successful though arduous journey, and to thank him on behalf of the Geographical Society for the interesting and valuable information he has brought to us from this desert and difficult land, and to ask you to give him a vote of thanks for the extremely interesting lecture he has given us, and for showing us those excellent slides which have illustrated his lecture so well.

A VISIT TO KARAGINSKI ISLAND, KAMCHATKA.

By G. E. H. BARRETT-HAMILTON and H. O. JONES.

FEW parts of the North Pacific coast-line are less known to geographers or navigators than the north-eastern seaboard of Kamchatka, much of which is still indicated on our Admiralty charts merely by a dotted line. It is therefore hoped that the following notes and photographs, taken on a visit recently made to the island of Karaginski and the neighbouring mainland at Karaga, may be of interest, the latter especially, since they give some insight into the life and customs of the people of Upper Kamchatka.

The visit, having been made in performance of the duties of one of the writers while employed in connection with the Bering Sea Mission, was necessarily a very short one, and even the present meagre notes could never have been collected had it not been for the willing help afforded by the captain and officers of H.M.S. *Linnet*.

The island of Karaginski is, from its position, less likely to be visited

COAST OF KAMCHATKA AND KARAGINSKI ISLAND.

by scientific explorers than either the more southern or the more northern parts of Kamchatka, since expeditions returning from the north are usually in too great a hurry on their homeward journey to be able to stop at an intermediate locality, while it lies far to the north of the track of ordinary visitors to Kamchatka. Hence it is that, as far as we can ascertain, the island has never been touched at by any scientific expedition.

Karaginski island lies off the eastern coast of Northern Kamchatka,

from which it is separated by Ukinsk bay—a channel varying from about 30 to 50 miles in breadth. The temperature of the surface water in this channel on August 20, 1897, varied from 50° Fahr. in Ukinsk bay to 51° Fahr. in Karaga harbour, which was a degree or two colder than the sea outside the bay, the coldest water we noted (49° Fahr.) being at the entrance to Ukinsk bay at midnight on August 20. At noon on August 22 the water in the bay was 55° Fahr.; and on August 24, when about 40 miles down the channel, the temperature was 50° Fahr., afterwards rising, as we got out to sea, to 57° or 58° Fahr.

The island has a length of about 67 miles, exclusive of the reef which runs seawards for a distance of about 6 miles from the southern extremity, Cape Krasheninikoff. Its breadth varies from about 15 to 18 miles, except at the southern end, where it gradually narrows to a width of about 2 miles, finally terminating in the reef above alluded to. The trend of the island is south-south-west and north-north-east, and its northern extremity, Golenischeva point, lies in about lat. 59° 15′ N. and long. 164° 41′ E.; Cape Krasheninikoff, at the south-eastern extremity, lies in about lat. 58° 22′ N., long. 163° 30′ E.

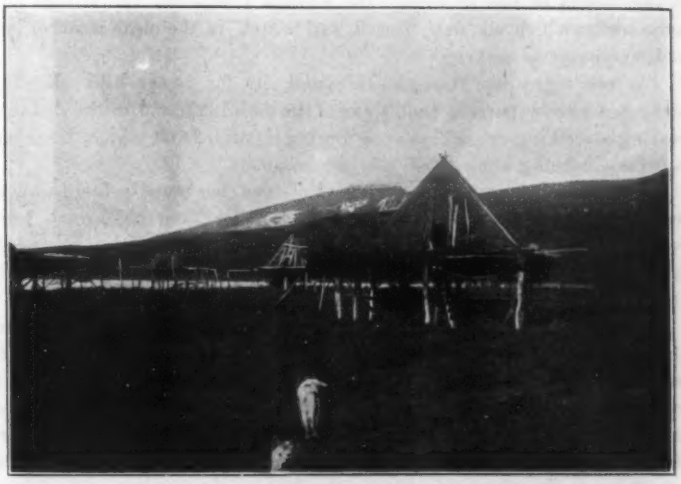
From the low southern point the eastern coast of the island very soon rises into a range of mountains, which probably do not exceed 2000 feet in height. Towards Bering sea and the north of the island the range seems to terminate in a series of fine precipices, at the feet of which, probably, is the home of many seals and perhaps of walrus.

Westwards the slope is gradual, and ends in an escarpment of a height of from 20 to 30 feet. This escarpment has been cut through in several places by some small streams, which issue from the undulating central portion of the island, and between it and the shingly beach there is, at the village which we visited, a narrow strip of thickly grassed ground just raised above the level of the shingle. This strip expands northwards into a large marsh, which forms the north-western portion of the island, and is drained by a river running into False bay, the spacious but deceptive harbour where we anchored. The harbour is protected by one of the peculiar Kamchatkan sandspits, which runs out for some distance into Ukinsk bay. There are, we believe, one or two small lakes in the interior of the island.

In the evening of August 20, 1897, H.M.S. *Linnet* approached Cape Ozerni, on the mainland of Kamchatka—a point which forms the southern termination of the entrance to Ukinsk bay, here having a breadth from Ozerni to Krasheninikoff capes of about 40 miles. No dangers are marked on the chart in connection with the former headland, and we were considerably and disagreeably surprised to find running out from the cape, for a distance of about 1½ miles in a north-easterly direction, a reef, on which a heavy swell was breaking so violently that huge sheets of water and spray were being hurled into the air sometimes

to a height of about 30 or 40 feet. The whole coast of this part of Kamchatka is, however, so little known, that it would be hard indeed to find a part of the world the charts of which are less reliable.

It was our intention to run up Ukinsk bay and anchor in Karaga harbour on the mainland just opposite to Karaginski island, before visiting the island itself. Little as Karaga harbour itself is known, the coast both north and south of it is even less so, not having been charted at all north of Cape Kuzmischeff, as well as for a considerable distance between Cape Ozerni and Karaga harbour on the south, and it was therefore necessary to approach our destination with extreme caution.



PART OF KARAGA VILLAGE, WITH BALAGAN IN FOREGROUND.

From Cape Ozerni to Karaga harbour is a distance of about 80 miles, and during the night we stood off the land, waiting for daylight to help us in our run up Ukinsk bay. On the morning of August 21 we ran up the channel, very soon getting into calm and shallow water, the soundings, which had showed bottom at 90 fathoms at the entrance, gradually decreasing to 10 fathoms as we neared the harbour.

The 21st was a brilliant, clear, and warm day, and as soon as the morning mist cleared off the land, we had an excellent view of our surroundings. Almost to the southward lay the entrance to the bay through which we had passed, the land here being high, and showing some very finely peaked mountains. Further north on the mainland, the chain of magnificent mountains which forms the backbone of Kamchatka retires to a distance of from about 30 to 40 miles from the

coast, leaving between it and the sea a stretch of undulating bush-covered tundra land, gradually ascending to their base. These mountains are, for Kamchatka, apparently of no great height, and the highest summits do not perhaps exceed 4000 feet. Yet they were boldly peaked and outlined in a manner exactly like the higher mountains in the southern part of the peninsula, to which they were only inferior in their lesser height. There was little snow remaining on them, and, if one may judge of this from the much greater quantity which we saw on the western slopes of the far smaller Karaginski mountains, the western side of the range must be that on which most snow lies.

From these mountains several rivers run down into Ukinsk bay, and at the mouth of one of these—the Karaga river—are the village and harbour for which we were bound, and which, in the clear weather, we had no trouble in making.

On our right lay Karaginski island, its far lesser hills showing many more snow-patches than those of the mainland, and in the distance bearing a striking resemblance to Bering island, from which, however, it differs in being a good deal less mountainous.

Birds were numerous in the channel, and we noted a few terns, as well as gulls of more than one species. Red-necked phalaropes were very plentiful, as they are elsewhere in Kamchatka, and a fine adult albatross (*Diomedea albatrus*) rose from the water at our approach. Duck of several species were also in abundance.

We anchored in Karaga harbour at noon, and could make out with our glasses some balagans, and traces of a village of some sort on shore. It was not long before a boat left the ship to reconnoitre, and on the beach was met by several of the natives. These turned out to be very friendly, and, what was equally important, could speak Russian, so that we were able to communicate with them. Later in the evening, several parties left the ship in search of sport, natural history specimens, and objects for the camera.

Karaga harbour is of fair size, but with little depth of water, and the bar at its mouth, on which the water shoals * to from 5 to 3 fathoms, must always effectually prevent the approach of large vessels. H.M.S. *Linnet* was probably the first man-of-war of any nationality, and certainly the first English man-of-war, to enter it. Like several † of the other Kamchatkan harbours, it is sheltered by a long pointed sandspit, which runs out for some little distance into Ukinsk bay. Right inside of this, and close to the shore, a second sandspit runs out in a nearly opposite

* We are indebted to Lieut. H. A. Gillett, of H.M.S. *Linnet*, for the information that the bar has a depth at low water of 3 fathoms at the south, and at the north of 4 fathoms. At its centre it is supposed to deepen to 5 fathoms.

† As, for instance, at Petropavlowsk, and also at Berevinskaya bay, near Cape Shipunski; in the latter case, on the authority of F. H. H. Guillemard (see 'Cruise of the *Marchesa*,' p. 216, 1st edit.).

direction, cutting off, except at one point, a considerable part of the inner extent of the harbour; on this second spit a choppy sea sometimes breaks with some force.

The harbour is well protected, but from the south-east a sea dangerous to boats might set up with a south-easterly gale. There is good holding ground on mud or sand, with an average depth of 7 to 9 fathoms after passing the bar. The *Linnet* anchored in 4 fathoms close to the sand-spit, 1½ miles south-east of the village.

The little village of Karaga consists of seventeen straggling balagans,* six yurts,† or mud huts, and one small tent, plainly labelled with the name and address of a firm of San Francisco merchants, the tent

A BALAGAN AT KARAGA VILLAGE.

having been apparently constructed of flour-bags sewn together. The total number of inhabitants can hardly exceed thirty, even supposing that each yurt may be regarded as the residence of a separate family of five individuals, such as is shown in our photograph, p. 287. The yurts, therefore, have the proportion of one to about three balagans, and not, as described by James King in the case of the Kamchadales of Petropavlowsk, of one to about six. This authority, the author of 'Cook's Third Voyage' (1784), states that, at Petropavlowsk, when he visited that town in 1779, there were nineteen balagans, three yurts, and

* A balagan is a wooden hut raised on piles to a height of about 10 feet from the ground.

† A yurt is a wooden hut covered over with sods and grass.

seven log-houses, the latter being an introduction made by the Russians. According to King, each family possessed a balagan for use as a summer habitation, but the yurts were used in winter by as many as six families in common. Our experience was slightly different, since we found both yurts and balagans in use at the time of our visit. This is also contrary to the present custom at Petropavlowsk, where the balagans are now only used as storehouses, and while the richer people of that town live in log-houses, the poorer have to be content with yurts.

The *yurts* and *balagans* at Karaga seemed to have been very carefully built. The door and doorway of the former were of wood, and the interior carefully constructed of roughly hewn logs, over which a thick wall of sods had been laid. There were generally two compartments, one a small sort of hall or ante-room, having a floor of hardened mud, and through which one passed in order to reach the inner part of the *yurt*, which formed the second and largest compartment. In the centre of the outer compartment a rough fireplace of stones was sometimes built.

The roof of one *yurt* into which we entered was supported by four posts, forming a rectangular space between them in its centre. This was the main compartment, and was separated by a wall of wood, with a door in it from the hall.* Those parts of the main compartment which lay outside the rectangular space between the four pillars were raised to a height of a few inches from the ground, and the whole floor was strewn with clean grass or rushes, which might serve as a carpet by day and as bedding by night, and gave us an idea of being far cleaner than the *yurts* of Bering or Copper islands, notwithstanding that the latter contain evidences of modern civilization in the shape of beds, crockery, and iron stoves. Nevertheless, the odour of the Karaga natives, and the readiness with which they spat on the floor, warned us that their supposed cleanliness was probably more apparent than real.

In the Karaga yurt the people sat or lay upon or near the edge of the raised portion of the inner compartment, exactly as portrayed in the plate in 'Cook's Third Voyage.' On our entering, however, a rough table was placed before us, with a bowl of the yellow "morushka" berries and a spoon. In another corner of the yurt a fire was burning, and the smoke, which penetrated to every part of the edifice before escaping through a hole in the roof, soon drove us into the open air again.

These yurts are so solidly built that it is perfectly safe to stand on the top of them; in fact, the roof is commonly used as a receptacle for things which the natives do not wish to leave on the ground. It is also a favourite resting-place for the dogs.

---

* As a rule, the only division between the two compartments was a wooden partition about 3 inches high, the whole flooring of the inner room being raised to that height.

Quite a different sort of edifice is the *balagan*, a thatched pyramidal hut raised to a height of 10 or 12 feet from the ground on posts and entered by a rough ladder * formed of a tree-trunk placed loosely leaning against one side of the floor, and having big notches roughly hewn in it to form steps. In the centre of one side of the room thus formed was a rough and doorless entrance, covered with a skin; and below the flooring hung the dried salmon which form the winter supplies of the natives—thus safely placed out of reach of the hungry sledge-dogs.

On the whole the balagans seemed to agree very closely with those described and figured by King and other earlier travellers. In the pictures given by Steller, however, the balagans have a rounded, not

A FAMILY PARTY AT KARAGA VILLAGE.

angular, exterior, and the ladders are not of the primitive type, but quite modern in appearance. The balagans also as seen by us differed from those described by King, in being provided with only one and not with two entrances. The shape of the balagans at Karaga is also worth noting, they being pyramidal, whereas those of Petropavlowsk as well

* Such ladders were found on the Kamchatka river, on the mainland, by Guillemard (see figure on p. 80 of Edition II. of the 'Cruise of the *Marchesa*'), as well as in such a widely different locality as Andai, in the north of New Guinea (*op. cit.*, figure on p. 391). In the latter case they cannot have been intended to prevent the access of animals, since the native dogs are stated to be able to ascend by them. I believe I also saw the same ladders leading to *balagans* on the island of Hoven Saki, in the Southern Japanese archipelago, but could not be quite sure through my glasses.

as the raised storehouses of the Ainus of Yezo,* are gabled like an ordinary hut raised on poles. But in the latter case the influx of Russian civilization would seem to have degraded the balagan from summer dwelling to winter storehouse.

The Karaga yurts differed from those described in the old voyages in being entered from the side only by means of an ordinary doorway, and not from the top by means of a ladder.† In this respect they bear a very great resemblance to photographs which we possess of the yurts at present in use among the inhabitants of Unalashka, the Commander, and the Kuril islands. The latter seem to have replaced, and to be a modern improvement of the yurt with the entrance in the roof, as in Cook's Voyage there is an excellent figure of one of the latter kind at Unalashka.

Our photographs will show the dress and appearance of the natives better than would a long description. They were for the most part clad, like other northern races, in robes of reindeer-skin, the furred part being worn inside, and with a square piece turned downwards in front of the neck, and sometimes ornamented with patterns made from different kinds of skins, the whole reaching not lower than the knees. Most of these robes were provided with hoods, but several of the natives wore old peaked Russian caps, which they had no doubt obtained from the crew of some seal or whale hunting schooner. Their hair was cut short, as in civilized races, and some of them wore only a moustache. Others, like the old man in the photograph on p. 291, allowed the beard to grow. He had also bound a white handkerchief round his head—no doubt to keep off mosquitoes, for which purpose also skin gloves, even if not worn, were carried.

In person and appearance these natives were generally well built and of average height; and the old man on the left of photograph (p. 291) must have been a very fine specimen when young. The man on the right of the same photograph was the chief of the village, and wore a European coat, as did also the man in the middle of the same group, on the occasion of an important visit to the ship. This garment had been a very smart tailed coat in its time, and retained even in its old age a trace of its original smartness; but it fitted its present owner so poorly, that it is to be hoped he will stick closer to the much more graceful robe of reindeer-skin.

These natives wore skin nether garments of boots and breeches made in one piece, which enable them to traverse the marshes without the discomfort of getting wet, and must keep them very warm in the winter months. The breeches were tightened at the ankle by being tied with either a piece of string or hide. The women and children were variously

* See the Rev. John Batchelor's 'The Ainu of Japan,' chap. iv.

† See description of yurt, as seen on Karaginski island (p. 296).

clad. Generally the former wore a short skin robe and a man's breeches, as well as a belt with a knife attached to it; their heads were, however, protected by a handkerchief, instead of a hood like the men. Their hair was allowed to grow long, and some of them wore loose linen or cotton garments, sometimes tied at the waist with a belt. Some of these garments were very gaudy, and must have been obtained by trade or exchange. One of the main characteristics of these natives, as also of those of the island, was their unfailing politeness. They bowed and took off their caps with a grace and ease which seemed to come as naturally to them as to the most cultured members of civilized races, and the shake of the hands and the Russian salutation, "Zdrastee,"

A YURT AND FAMILY PARTY AT KARAGA VILLAGE.

seemed no more out of place among them than it would in the streets of St. Petersburg.

They were not, however, as simple either in their manners or in their dress as the inhabitants of Karaginski island, whom they also excelled in being able to speak Russian fairly well, whereas the latter were only acquainted with a few words of the language, and that only in the case of a very few individuals.

In both cases a request to be allowed to take photographs was readily complied with, and permission granted to enter the dwellings. One old lady at Karaga, although quite blind,* left her *balagan* at our request,

* The only other ailments noticed were lameness in the case of one young man at Karaginski, and a bad cough in the case of the old man at Karaga.

descended the rickety pole-ladder which led to it, and posed herself for a picture. In both cases European stores of various kinds were preferred to money, and in the case of the islanders money was refused. Lastly, the people of the two villages were similar in their desire for strong drink, the word "rhum" being a part of their somewhat limited European vocabulary.

We did not see many of the household implements or weapons of these people. Besides knives, however, they all carried small leather bags, containing a piece of flint and tinder, and a heart-shaped piece of wood hollowed out to receive one or the other when a fire was to be lit.

As at Petropavlovsk, and elsewhere in lower Kamchatka, dug-out canoes were in use here; on Karaginski, however, skin boats only of various sizes were seen.

Domestic animals are few in kind at Karaga, but the number of individuals of the sledge-dogs makes some amends for the paucity of kinds. These brutes were of the usual Kamchatkan type, with prick ears and curly tails. Their colour was very variable, but, as remarked by Guillemard in his 'Cruise of the *Marchesa*,' many have a tendency to be white. There was no attempt to keep these dogs tied up, and they ran wild in all directions around the village, or lay about between or on the huts. Most of them, however, had small holes in the ground near their owners' dwellings, and in these they could lie quite snugly in any weather.

The presence of the dogs, of course, effectually prevents their owners from keeping fowl of any kind. We saw one light-coloured pony tethered in the village, and we were told that the natives possessed some cattle, but if that was so, we saw no trace of them, nor did we ascertain if they were the possessors of a herd of reindeer. Their main food at this time of the year would appear to consist of berries of various sorts and of fish.

Altogether, the people of this village were rather puzzling, and seem to present some of the characteristics in a mixed degree of Chukchis, Koriaks, and Kamchadales, the three little-known Mongolian races which alone are said to inhabit these regions. Their dwellings, however, were sufficiently Kamchadale in character to stamp them as members of that race. Indeed, it seems to be mainly by their habitations and in their language that these tribes are distinguishable *inter se*, their features and clothing being, to judge of the various accounts which have been given of them, not very distinct. Steller tells us that the Kamchadales are, in general, an undersized people, but some of these natives were tall and of very fair proportions. This, and the fact that some of the men were bearded, may show a mixture of blood in their veins, possibly traceable to the presence of the Russians for over a century in Kamchatka.

In dress also the inhabitants of Karaga village seem to show a mixture of blood and habits, for, if we are to believe Langsdorf ('Voyages,' part ii. p. 319, 1814), the hooded robe without an opening at the bosom, and with the ornamented breast-piece hanging down from the neck, is a characteristic of the Koriak, and not of the Kamchadale tribe.

Our shooting-parties at Karaga were not very successful, river-duck being as scarce as the sea-duck were abundant. Even, however, had the suitable kinds of duck been more numerous, they would probably not have afforded much sport, since most of this year's brood of such species as

NATIVES OF KARAGA VILLAGE ON BOARD H.M.S. "LINNET."

we saw were still either very young or in the flapper stage. The same applied also to the willow-grouse and ptarmigan, of which a few were brought in. No capercailzie or other game were seen, and the thick growth of scrub and grass must have made the bringing to bag of any big game almost an impossibility, even had such been obtainable near the village; though, as a matter of fact, big-horn and reindeer probably do not occur nearer than in the mountain chain, at a distance of perhaps two or three days' journey from the coast. Bear may, and probably do, occur on the lower ground, but at this time of the year in Kamchatka, food—in the shape of berries and fish—is so abundant, and vegetation so thick, that to bring one to bag must be a very difficult feat; add to which, that even in September the myriads of mosquitoes with which the country is infested make life almost unbearable. So it can be

readily imagined that the life of a hunter of big game in Kamchatka, in August, is not exactly one of wholly unalloyed pleasure.

A seining party of bluejackets was very fortunate, easily securing about 600 lbs. of salmon, of the species locally known in Kamchatka as the haiko (*Onchorhynchus lagocephalus*). This, however, was not the only fish running at the time, for we obtained from the natives two or three fine examples of another species of the same genus, the kisutch (*O. sanguinolentus*). These two fish are the latest of the numerous Kamchatkan salmon to go up the rivers, and were at the time of our visit quite clean, and afforded excellent eating. The flesh is pale, and probably the best flavoured of any of the larger species of the genus, with the exception only of the chervichi, or king salmon (*O. orientalis*). The haikos caught on this occasion varied in weight from 6 to over 14 lbs., and we estimated the total weight of seventy of them as at least 600 lbs. A few small flat fish were also caught.

If salmon were numerous, hair-seals were almost equally so—of the species (*Phoca largha*), which in the Pacific takes the place of the common Atlantic harbour seal (*P. vitulina*). Of other mammals we saw no trace, and some traps which we set for small species secured nothing. A walrus head, with tusks weighing over 15 lbs., was purchased from the natives by one of our party.

Birds of several species were fairly numerous, but our short stay prevented us from making a large collection. Besides those already mentioned, a crow (probably the Kamchatkan form of the carrion crow, *Conus corone levaillanti*) was fairly common, but was not obtained. Close to the village, flocks of large and very long-billed curlews (*Numenius*) found rich feeding on the berries, or at the edge of the small lagoon. Two or three species of gulls, the Red-legged (*Larus ridibundus*), the Common (*L. canus*), and another, were obtained, and the shooting-party reported finding the breeding-place of one species up the river. A grey and a pied wagtail were also plentiful, and two or three other small species were seen. Wading birds of several kinds were also obtained, but perhaps the most conspicuous bird of all was a large diver (*Urinator*), whose long uncouth body, flying with slightly bent back, rapidly beating pinions, and hoarse croaking cries, was hardly ever out of our sight or hearing.

Insects were pretty numerous, and a small collection was made and brought home; and for a botanist a fairly rich field lay open, but we had very little time for noting the vegetation. The shrubs and trees consisted of alders, willows, dwarfed examples of a mountain ash, and of a small pine, as at Petropavlovsk. The other vegetation was very similar to that of Petropavlovsk, but far poorer in species, though the grass and scrub was every bit as luxuriant. Berries were plentiful, and included the "morushka" and several other kinds. A large pink willow herb (*Epilobium*), a large yellow arnica, the white arctic ox-eye

daisy (*Chrysanthemum arcticum*), and a blue polemonium were among the most conspicuous flowering plants.

At 11 a.m. on August 22, we steamed across the 25-mile channel which separates Karaga harbour from False bay, in Karaginski island, and anchored in the latter at about 4.30 p.m. of the same day.

The only excitement of the passage was the sighting of a walrus and its young lying on the sandspit which forms the harbour. A boat was lowered to go after them, but the animals winded us and took to the sea.

False bay and harbour are formed by a spit of sand extending in a south-westerly direction from the western coast of the island, rather near its north-western extremity, on the side of Ukinsk bay opposite to

A BALAGAN ON KARAGINSKI ISLAND.

Karaga harbour. It is well protected from winds except from south to west. There is no bar, and there is a depth of 9 fathoms of water, gradually lessening to 5 at a distance of about 2 miles from the head of the bay, where the water rapidly shoals to 1½ fathom. The holding-ground is good.

In the harbour we were easily able to make out a few scattered balagans—not gathered together to form a village as at Karaga—as well as, what was quite unexpected, a rectangular log-built building, looking just like the store of some company. The meaning of this was afterwards explained to us by the natives, who informed us that some twenty or thirty years ago an American schooner had landed a party of men here, and that they had built the store to hold the skins and ivory which

they took while on the island. According to the account of the natives, they quite "cleared the place out" of walrus, which explains the fact that we saw only two. The natives, however, had a few tusks for sale.

It was not long before an exploring and reconnoitring party left the ship, and our experience on shore well repaid us for the many miles of ocean which we had travelled to reach this spot. As we landed near one of the balagans, a party of eight or ten of the inhabitants of the island came down to the beach to meet us, and formed about as strange looking a company of human beings as it would be possible to imagine. Dark-haired and dark-eyed, of more than average height, with intelligent countenances, and blessed with an equal or even greater share of the gift of courtesy than the people of Karaga, it was not only in their manners, but in their dress and houses and implements, that these people showed their quaintness. The whole male population did not appear to exceed a dozen souls,* and we saw no women or children near the balagans; in fact, it was not until the following day that one of our party, while out shooting, accidentally met one of the former. They evidently had another village somewhere inland, and we were told that there were more people living at the other side of the island. These people had usually no hair on their faces, though one of them at least had a slight growth of whiskers. Their straight dark hair was in some cases cut short, and in others allowed to fall downwards on all sides of the head, like a mop, and with a length which was evidently not much short of that allowed to it by nature. One man had a circular portion of his head cropped fairly close, while the rest of his hair was allowed to grow long.

In dress they were far more primitive and simple than the Karaga people, and, with the exception of one or two very ancient peaked caps and handkerchiefs, did not possess any European clothing. With the foregoing exceptions, all wore roughly made skin caps of no particular shape, and constructed so as to cover the back of the neck. This, together with the fact that all carried gloves made of skin and slung on to their skin robe, or—with the knife and fire-bag—on to the belt, gave us an early intimation of the numbers of mosquitoes to be expected. Nor were we disappointed. Even the natives here, while speaking to us, were constantly brushing the mosquitoes off their hands and faces.

For clothes these people wore the hooded robe of skin (the hairy side turned inwards), the flap in front being either ornamented with a square chessboard-like device made of different-coloured skins, or fringed with fur, or in many cases quite plain. As in the case of the Karaga

* At Petropavlovsk we were informed that only one family is said to exist in this village, but the presence of two old men makes it seem likely that there are at least two families. One of these old men, whose knowledge of Russian was better than that of his countrymen, was always put forward as interpreter when any difficult topic of conversation came up.

people, their beautifully made skin breeches and boots were so constructed as to form one article of clothing.

These people are said to have followed their reindeer over from the mainland during a winter, in which the straits were frozen over, and to have been unable to return whence they came, there having been, since they crossed, no frost severe enough to enable them to travel on the ice. Whether this story is true or not, we are unable to say, but it was told to us in Petropavlowsk. The people themselves seemed to us to be very

TYPE OF INHABITANT OF KARAGINSKI ISLAND.

different from those whom we saw at Karaga. They told us that their reindeer were in the hills at a distance of one or two days' journey from the village; besides reindeer, they possessed the usual type of sledge-dogs, but we saw no trace of any other domestic animals.

Their features seem to resemble very closely those of the Chukchis of Indian Point, of whom we possess a photograph, and their stature was certainly far superior to that ordinarily ascribed to the Kamchadales. On the other hand, their habitations were distinctly Kamchadale, and bore no resemblance either to those of the tent-dwelling Chukchi or to the

conical skin-covered huts of the Koriaks as described by Langsdorf, yet their dress was that which is said to be distinctive of the latter people. If the story of their having crossed over to the island from the mainland be true, they may be a party of Chukchis, or Koriaks, who, having wandered down from the bare northern tundra to a region where trees exist and wood is procurable, have adopted the Kamchadale form of dwelling. The absence of women from the main village would support this supposition, for if we remember rightly, the Koriaks are said to keep their women apart.

Only a few of these natives speak Russian,* and this they pronounce so badly that even our native hunter from Petropavlovsk could hardly understand them, so that our conversation was of a somewhat strange character. They, however, made up for their poverty of language by breaking into peals of the most hearty and unaffected laughter. The effect was catching, and soon we ourselves, as well as the Russian hunter, joined in, every simple sentence or question being terminated by a burst of laughter.

The balagans were here very similar to those of the mainland, and the people also eat fish and berries. We also saw one man eating a cone of the small dwarf pine, which here grows in close-set thickets. The only yurt we could see near this straggling village had a curious entrance to it from the roof, with a door which could be raised or lowered by means of an attached pole. It was exactly like the winter habitations figured in Cook's Third Voyage, but differed from them in not possessing a door at the side for the use of the women. We looked into this yurt, but did not descend the notched pole, which, as in the case of the balagans, formed the only means of ingress. The interior was bare, and there was a puddle in the centre of the floor, which gave it the appearance of not having been recently inhabited — an assumption which gains support from the presence of a hole in the ground for use as a fireplace near one of the balagans, and also from the fact that we saw the natives eating a meal of dried salmon seated on skins on the beach, under the shelter of their upturned *bidarra*, or skin boat.

In the balagans were kept many treasures, and we entered one and proceeded to investigate its contents. Among these we found the skins of reindeer, bear, and red fox, and we were informed that white foxes are also caught. The foxes are secured in an original kind of trap of a make very similar to that figured by Guillemard in 'The Cruise of the *Marchesa*' (1st edit., vol. i. p. 162), which he noticed on the Kamchatka river at Uskovska. It is said that bears are also caught in traps of the same description, though of a larger size. We saw no skins of the fur seal.

* We noticed that, while conversing among themselves, a few simple Russian words seemed to be used by the natives, sandwiched between the words of their own language.

They keep their more precious or breakable household goods in bags, beautifully constructed either of the skin of the common hair seal (*Phoca largha*) or of the rare ribbon seal (*Phoca equestris*). One of the bags made of the latter skin we secured, and we were told that the species occurs on the Pacific coast of the island. In one of these bags we found a rough wooden box containing some writings in Russian, which we were unable to read, but which may have been left by the crew of the schooner by whom the log hut was built.

NATIVES OF KARAGINSKI ISLAND ON BOARD H.M.S. "LINNET."

The skins of the walrus and of a larger species of seal which occurs here—perhaps *Phoca barbata*—were kept stretched on frames for use in the manufacture of the skin boats, which will be described below.

Other implements which we noticed were snowshoes; a wooden tripod to stand over a fire, having wooden flesh-hooks suspended to it; a wooden ladle; and some bone knives, which are used for killing seals or other game when wounded. Spears they also possessed, whose steel points were carefully protected, when not in use, with caps made of skin. Perhaps the quaintest of all their possessions were two strange-looking shooting instruments (we use the word advisedly),

consisting of an old iron barrel roughly fitted into a wooden stock, and fired by means of a flint. These had a prop attached to the forepart of the stock, on which to rest the instrument when being fired. In connection with these strange weapons were kept a varied assortment of bullets-bags and powder-horns—the latter made of the horns of the Kamchatkan big-horn (*Ovis nivicola*), as well as sight-protectors very carefully made of bone, and skin covers for the gun-locks. A hair seal was shot with one of these guns during our stay, and we obtained the carcase. When hunting, the natives seem to go armed with both spear and gun, as at least two of them, whom we saw returning to the village, carried both weapons.

The snowshoes, both at Karaga and on the island, were of the latticed North American type, and quite different to those in use in the neighbourhood of Petropavlovsk, which consist of a long light framework, rectangular in shape, and covered with walrus or hair seal-skin, the skin being brought to a point at the ends, and the hair being laid backwards to facilitate hill-climbing.

The natives came off to the ship in a skin boat, or *bidarra*, large enough to hold them all, and capable of sailing when the wind was suitable. This boat was broader, and did not stand so high out of the water, as those which we had seen in use as lighters on the Pribiloff islands. She carried a painter of hide, by means of which they made her fast to the ship. When not sailing, she was propelled by a set of narrow-bladed oars, and the steersman used a broad one instead of a rudder. We also saw smaller skin boats capable of carrying one man, and technically known in the Aleutian islands as "one-hole bidarkis."

Probably the quaintest sight we have ever seen, or ever will again see, was this skin boat with its uncouth crew of skin-clad natives paddling off to the ship, the paddles not moving together like those of an English boat, but by sides, port alternating with starboard, like the legs of an American pacer. Could the writer of 'Punch's Prehistoric Peeps' have been with us, he could hardly have failed to recognize in the originals what he had only drawn from imagination, a striking compliment to the faithfulness of his invention. Almost quainter still was the grave and courteous bow with which their interview with the captain began and ended, and their consumption of an impromptu meal of tea, biscuit, and various scraps served out to them by the bluejackets, was the source of much amusement forward.

On August 23 the weather was again brilliant and warm, and several parties left the ship, as at Karaga, in pursuit of sport or natural history. The former, although under the guidance of a native* of the island, were not successful. The reindeer were said to be in the hills

* This gentleman's love of berries was the source of many halts and not inconsiderable delay while he filled himself with his favourite food.

at the north of the island, the thick undergrowth effectually prevented the pursuit of bears, and, although a good many duck were seen, these were chiefly of non-edible kinds, such as the Scaup and the fine King Eider (*Somateria spectabilis*). Some geese were seen, but not secured, and the bag consisted mainly of a few couple of willow-grouse.

The naturalists' party was far more successful, and struck across the undulating country which rises gradually from the western coast escarpment to the mountains on the eastern side of the island. Here the ground was thickly covered with an undergrowth consisting of scrubby pines, as at Petropavlowsk, mountain ash, alder, and willow—the pine thickets being especially dense, and bearing out Guillemard's description of the similar thickets near Cape Shipunski (see 'Cruise of the *Marchesa*,' 1st edit., vol. i. p. 212). Between these thickets were small glades thickly covered with grass and several species of flowering plants, and forming the only means of passage over the country. Here any number of bear and other game might easily have lain hid, secure from all disturbance, and the solitary willow-grouse which we surprised and shot must be regarded as a very lucky addition to the bag. In the thickets we were surprised to find several kinds of warblers and small birds, all, however, very difficult to secure in such a country. We were disappointed not to meet with any eagles on Karaginski island, as we had hoped to find the rare *Haliætus hypoleucus* of Ridgeway there. If eagles occur on Karaginski island, it can only be on the more precipitous eastern side of it, which we were unable to visit. Richardson's skua was here seen and shot as at Karaga, and a Lapland Bunting was also obtained. In other respects the birds seen or shot were the same as those of Karaga.

Besides the trees and shrubs already mentioned, we noted many plants with which we were already familiar on Bering and Copper islands, such as some umbellifers, a red musk thistle, a conspicuous geranium, a large pink willow herb (*Epilobium*), a blue iris (*Iris? Sibirica*), a polemonium, golden rod, rhododendron, nettle, tansy, equisetum, with many berry-bearing plants, including conus, empetrum, the "morushka," and the "hurtz."

Among the wealth of attractive flowers two species of humble bees were busily reaping an abundant harvest, and we saw also three species of butterflies—a tortoiseshell (*Vanessa*), a garden white (*Pieris*), and a yellow species—two bronze dragon-flies, and several species of flies, beetles, and spiders, a small collection of which was brought home.

Under the hot afternoon sun, the mosquitoes became so troublesome that we were glad to go on board the ship somewhat earlier than we had intended, and on August 24 at 6 a.m. we weighed anchor and sailed for Petropavlowsk, regretting that our acquaintance with such a quaint and simple-minded people and an almost wholly unknown country should have been such a short one.

AFRICAN BOOKS OF 1897-98.

By EDWARD HEAWOOD, M.A.

In passing under review the principal works relating to Africa which have appeared within the last twelve months, it may be well to group them according to the broad subdivisions of the continent to which they refer. The greater number will be found to deal with one or other of the British African possessions, British travellers having been of late unusually prolific in narratives of their experiences, and it is satisfactory to see that the parts of Africa with which we are most concerned as a nation are acquiring so extensive a literature of their own.

Beginning with South Africa, we may single out one from the numerous works called into being by the late critical times as especially valuable from the geographical point of view.* In giving to the public an account of the present condition and prospects of South Africa as seen in a journey from Cape Town to the Zambezi and back to the East Coast, Mr. Bryce shows the true feeling of a geographer in the best sense of the term. At the outset he draws a striking picture of Nature in the region dealt with, firstly in its broader outlines, and afterwards more in detail in respect of its separate political units. He then deals with South African history in the light of the physical facts observed, adding in the third part the more immediate results of his own inquiries, and finishing with a masterly discussion of some of the most important social and political questions which affect the future prosperity of the country. Throughout the book the author takes much pains to present the true causes of observed phenomena, and thus gives an unusually clear view of the relation of the political to the physical geography of the region.

Captain Younghusband's book,† forming a reprint of letters and telegrams addressed by him to the *Times* while representing that journal in South Africa, is less elaborate than Mr. Bryce's, and is written rather from a political than a geographical point of view. It contains some vivid sketches of the present condition of the country, and a thoughtful study of the outlook both in the Transvaal and in Rhodesia. The bulk of the settlers in the latter are, he considers, far from being ardent Imperialists, though attached to the mother country; they at present hold to the Chartered Company for what it can do for them, but hope in the future to form themselves into one of our great self-governing colonies.

Coming next to a remote corner of the South African interior, we have to notice the record of M. Coillard's devoted labours, as an agent of the Evangelical Missionary Society of Paris, in the kingdom of the Barotse potentate, Lewanika. This work is published both in

* 'Impressions of South Africa.' By James Bryce. London: Macmillan. 1897.

† 'South Africa of To-day.' By Captain Francis Younghusband, C.I.E. London: Macmillan. 1898.

English * and French,† the subject-matter being in the main the same. It is written in a simple and straightforward style, which at once arouses our sympathy, and records a long and arduous fight against difficulties, which must have called for qualities of a very high order. It contains a mine of interesting information respecting the Barotse and their king, who, in the extraordinary mixture of good and evil presented by his character, seemed to M. Coillard an exact counterpart of Mtesa, as portrayed by Mackay. The area over which his influence extends is estimated by M. Coillard at 200,000 square miles, though the tribes which pay tribute by no means form a homogeneous nation. The physical character of the Barotse plain—flooded during a large part of the year, so that all communication is carried on by canoe—is well described, and one of the later chapters contains the account of a canoe-voyage on the upper Zambezi, noteworthy from the fact that, since Livingstone's first great exploring expedition, not a single European had ascended its higher portion, though the French traveller's example has lately, we believe, been followed by Major Gould Adams. M. Coillard is an enthusiastic photographer, and both the English and French editions are abundantly illustrated from his negatives.

A second book dealing with the Barotse kingdom, is that of Major Gibbons,‡ whose exploration of the eastern tributaries of the upper Zambezi is already well known to our readers. The major was fortunate enough to secure Lewanika's interest in his explorations—the king remembered Livingstone's work of the same kind—and he is thus inclined to speak favourably of the African potentate. The narrative is written in a fresh and attractive style, with an abundance of sporting incidents for those who look principally for adventure in books of travel. Geographically, the most important journey was that to the Mashukulumwe country, on the upper Kafukwe, which proved a large stream. An interesting piece of exploration still remains to be done in the tracing of its upper course, which we may hope Major Gibbons will accomplish by his present expedition. The author has some interesting remarks on the Matoka plateau, lying between the Kafukwe and the Zambezi, which he regards as a favoured spot for white settlers in the future, whilst a railway to the Zambezi would render its abundant crops a valuable resource in the case of scarcity in Matabililand.

Still another addition to the literature of the upper Zambezi has lately been made by the work of M. Bertrand, of Geneva,§ which describes a journey made partly in company with Major Gibbons. It is handsomely got up, and embellished with a large number of illustrations

* 'On the Threshold of Central Africa.' London: Hodder & Stoughton. 1897.

† 'Sur le Haut Zambèze.' Paris: Berger-Levrault. 1898.

‡ 'Exploration and Hunting in Central Africa.' By A. St. H. Gibbons. London: Methuen. 1898.

§ 'Aus Pays des Ba-Rotse, Haut-Zambèze.' Paris: Hachette. 1898.

from the author's photographs. Much of the book describes parts of South Africa now fairly well known, but the seventh chapter deals with a previously untraversed region, and is thus of original value. An appendix devoted to the Barotse, their customs and history, also contains some useful matter.

A connecting link between South and East Africa is supplied by M. Dècle's important work,* which describes journeys extending over 7000 miles, and reaching from the Cape to beyond the equator. The author, who had almost from childhood been devoted to travel, and had acquired an extensive acquaintance with many of the countries of Europe, Asia, and North America, was in 1890 entrusted by the French Government with a mission in South and East Africa, for the study of the ethnology of those regions. In the course of his three years' wanderings, M. Dècle was led to extend his routes, first to the Zambezi and Lake Nyasa, and subsequently to Tanganyika and the Victoria Nyanza, reaching even the borders of Unyoro. He thus gained an unusually wide experience of African countries and peoples, and, while not claiming the title of an explorer, is able to give a general view of a large part of the continent at the time when it was just emerging from its original barbarism, and being brought under the new *régime* of settled government by the white man. He has striven, and with success, to make his book generally useful, keeping his own adventures more or less in the background. He approaches his subject entirely without bias, and has some outspoken remarks on various problems connected with the future of the continent, such as the introduction of Christianity and the suppression of the slave-trade. His estimate of the character of King Khama is by no means so favourable as that put forward in other quarters; but, while his ideas may not meet with universal acceptance, they no doubt supply a useful corrective to the over-sanguine estimates which have been formed by more or less biased advocates. The book is fully provided with maps and illustrations.

Of books devoted exclusively to East Africa, Mr. FitzGerald's profusely illustrated volume † deserves to be mentioned first, as forming not a mere record of adventure, but a work of solid value as an authority on the agricultural resources of the British East African coast. The author, who had previously gained a wide experience of tropical agriculture in South India, was sent out by the British East Africa Company in 1891 to report on the agricultural capabilities of the country, and these formed his study during the two succeeding years, devoted partly to agricultural experiments at the Magarini plantations ("Shambas") taken over by the company, and partly to travel with a view to the examination of the country generally—its natural resources

* 'Three Years in Savage Africa.' By Lionel Dècle. London: Methuen. 1898.

† 'Travels in the Coastlands of British East Africa and the Islands of Zanzibar and Pemba.' By W. W. A. FitzGerald. London: Chapman and Hall. 1898.

and suitability for agricultural undertakings. The northern part of the coastlands within the British sphere had previously been little known, so that Mr. FitzGerald's explorations, which extended up to Port Durnford, have made some positive additions to our knowledge, as will be seen from the series of large-scale maps constructed by Mr. Reeves. As practically nothing had before been published with respect to these journeys, the appearance of the book, though somewhat delayed, is most welcome. In the second part of the book, Mr. FitzGerald deals with Zanzibar and Pemba, describing fully the methods of clove cultivation, and discussing the possibility of the introduction of new products. There are also some useful appendices giving technical details respecting the various fibre and rubber producing plants, etc., to which attention might be paid in East Africa. The general conclusion arrived at is that British East Africa affords a fine field for the cultivation of tropical products, if once the labour question can be solved by the introduction of coolies from India.

Another work describing travels in East Africa, of which little had previously been made known to the public, is that of Mr. A. H. Neumann,* who in 1893–94 undertook two expeditions into the interior, penetrating finally as far as the north end of Lake Rudolf. A keen sportsman, and finding the advance of civilization in South Africa inimical to his favourite pursuits, Mr. Neumann landed at Mombasa, with a view to wooing Nature in her most inaccessible wilds. Dealing as it does with parts of the continent still so little trodden by white men, the book presents much that is novel and interesting, though to non-sportsmen it is perhaps somewhat marred by its tales of wholesale butchery of the noblest African game. The author himself pleads guilty to the charge of cruelty, though the blame might perhaps more justly be laid to an undue prominence of the "organ of destructiveness," which seems to find its satisfaction in proportion to the nobility of the object on which it is exercised. Future generations of nature-lovers will, we imagine, be little disposed to bless the memory of those possessed of it. Apart from this, however, there is much in the book that well repays perusal. Although the author made no scientific survey, he shows considerable powers of observation, and records many interesting facts respecting the natives with whom he came in contact, the habits of animals, and the country itself. The description of the shores of Lake Rudolf is of special interest. During the passage of the desolate lava-strewn country to the south-east of the lake a strong gale blew incessantly, making things thoroughly uncomfortable. The lake, however, was most beautiful; it seemed deep at its southern end, and its water proved quite drinkable, though possessing some unusual qualities. Before reaching it a glimpse was obtained of the lake since

* 'Elephant Hunting in East Equatorial Africa.' By Arthur H. Neumann. London: Rowland Ward. 1898.

discovered by Mr. Cavendish, while a conical peak was seen in about the position of Teleki's volcano, showing, however, no sign of activity. There are some striking illustrations of animal life, and the map is clearly drawn, though not very detailed.

British East Africa is again the subject of the first part of Lieut. Vandeleur's book,* which gives a readable narrative of his work on the Nile and Niger already well known to our readers. Although largely a record of fighting, there are many incidental details respecting the countries traversed, those regarding the Nandi district, east of Uganda, being perhaps of most value. The book is useful as the most recent account of the state of the Upper Nile region previous to the Sudanese mutiny. A thoughtful essay by Sir George Goldie sums up in a striking manner the problem connected with the opening up of the continent by European nations, with especial reference to the Nigerian Sudan, while the author gives a chapter on the history of European enterprise in the same region. He calls attention to the remarkable insight displayed by Mr. M'Queen in writing of the Niger in 1821, though he fails to mention that an earlier writer, the German Reichard, had correctly placed the termination of the river in the bight of Benin.

One or two more East African books remain to be spoken of before proceeding to others concerned with the West. The narrative of Mr. Rodd's mission to Menelik is brightly told by Count Gleichen,† with many humorous touches relating to the hundred and one difficulties and trials which beset the African traveller. The book supplies some useful information respecting the rise to power of the Abyssinian empire, and sketches of the life of the inhabitants. It adds another to the portraits of African potentates already alluded to,‡ in the character sketch which it gives of King Menelik, who is described as a most enlightened as well as a strong ruler. A quotation from Colonel Wingate supplies an explanation of the frequent changes of the capital, as necessitated by the gradual destruction of the forest, whence fuel and building materials are obtained. A neighbouring region forms the subject of a lately published work by Prince Ghika,§ who with his father made a trip to Somaliland in 1895–96. It is mainly a record of hunting adventures, most of the illustrations, too, relating to the prince's numerous victims, though there are also one or two excellent representations of scenery. There is a good map by Prof. Paulitschke, and a description of the plants collected by Drs. Schweinfurth and Volkens.

---

* 'Campaigning on the Upper Nile and Niger.' By Lieut. Seymour Vandeleur. London: Methuen. 1898.

† 'With the Mission to Menelik, 1897.' By Count Gleichen. London: E. Arnold. 1898.

‡ Lo-Bengula, as well as Khama, is described by M. Dècle, who says that, except the Czar Alexander, he has never seen a ruler of more imposing appearance.

§ 'Cinq Mois au Pays des Somalis.' By Prince N. D. Ghika. Geneva and Bale: Georg. 1898.

Turning now to West Africa, the most important work of the past twelve months is that of Lieut. Hourst,* who supplies a detailed narrative of his great journey from St. Louis to Timbuktu, and down the Niger to its mouth. It was, of course, only at Timbuktu that the chief geographical interest of the journey commenced, and the bulk of the book is taken up with the heroic struggles involved in the difficult passage of the Middle Niger, with its hostile population and numberless impediments of navigation. Some information of interest is however given in the first two chapters with regard to the older portion of the French Sudan, as the port for which the author regards Dakar as having a great future before it. Although the form of the narrative does not allow of much systematic geographical description, the book presents incidentally, aided by the abundant illustrations, a vivid idea of the varying nature of the great West African river, while the information respecting that interesting people, the Tuareg, is perhaps its most valuable feature. The author puts forward his ideas as to the best mode of bringing this warlike people under French influence, holding that the Awellimiden, who form under their chief Madidu the best organized and most powerful confederation of that stock, should be utilized to keep in check their more turbulent neighbours. As might be expected, Lieut. Hourst has some bitter things to say with regard to the Royal Niger Company and its mode of action, though he has no fault to find with individual Englishmen with whom he came in contact. His contrast of the progress made by his countrymen on the upper Niger with the work accomplished by the British on the lower river, is, many will be surprised to hear, very much to the disadvantage of the latter.

One other book of travels remains to be mentioned, viz. Colonel Trotter's account of the proceedings of the Anglo-French Commission for the demarcation of the Sierra Leone boundary.† The interior parts of that colony were previously so little known that the labours of the commission resulted in a large amount of fresh geographical information, the most important features of which have already been laid before our readers. Colonel Trotter now places before the public in a handy-sized volume a pleasantly written narrative of the doings of the commission, combined with further details on the geography of the country passed through, its inhabitants, and their mode of life.

One or two works dealing with special subjects have also appeared during the past year. Dr. A. Poskin‡ has collected a large amount of

* 'Sur le Niger et au Pays des Touaregs. La Mission Hourst.' Par le Lieut. de vaisseau Hourst. Paris: Plon. 1898.

† 'The Niger Sources and the Borders of the New Sierra Leone Protectorate.' By Lieut.-Colonel J. K. Trotter, R.A. London: Methuen. 1897.

‡ 'L'Afrique Equatoriale, Climatologie, Nosologie, Hygiène.' Par le Dr. A. Poskin Brussels: Soc. Belge de Librairie. 1897.

information on the climatology of Tropical Africa in its relation to disease, elucidating the subject from his own experience as medical officer on the staff of the Congo railway. He begins with a sketch of the physical features and meteorology of the region in question, coming afterwards to the consideration of diseases and the rules of hygiene which should be followed. His views by no means coincide with those of Dr. Sambon lately placed before our Society, for he speaks of the intimate relations which exist between the climate and the special diseases of Tropical Africa. He points out that the purity of the air depends on such factors as the configuration of the soil, its geology, vegetation, etc., in which respects the situation of Equatorial Africa is markedly unfavourable, while certain maladies, such as heat apoplexy and tropical anemia, are classed by him as distinctly climatic.

A useful contribution to the history of the opening up of Africa is supplied by Dr. H. Dehérain,* who describes the conquest of the Egyptian Sudan under Mehemet Ali. This is a chapter of African history which is by no means widely known, and one which derives a special interest from the present military operations in the same region. There is an instructive chapter on Khartum, and the advantages and disadvantages of its geographical position, while the influence which Mehemet Ali's schemes had on subsequent events in the Sudan is clearly traced. Lastly, M. Victor Deville has lately published a concise sketch of the exploration and partition of Africa,† written from a decidedly French standpoint, but apparently reliable as to facts. He allows that the British, Germans, and Belgians have secured a better position than the French as regards the agricultural and commercial benefits to be derived from Africa, and impresses on his countrymen the need of learning a lesson from their rivals.

THE OLD BEDS OF THE AMU-DARIA.‡

By P. KROPOTKIN.

WITHIN the last few years the Russian Geographical Society has published, besides a number of papers, two important works on the lower course of the Amu and the Transcaspian lowlands, namely, 'The Old Beds of the Amu-daria,' by Baron Kaulbars (*Izvestia*, vol. xvii. p. 4); and 'The Transcaspian Lowlands,' by M. Obrucheff (*Memoirs*, General Geography, 1890). A third work of equal importance, 'Discussion of the Question relative to the Old Course of the Amu-daria,' by A. M. Konshin, is now added to the above.§ The three works, together with the

* 'Le Soudan Egyptien sous Mehemet Ali.' Paris: Carre & Naud. 1898.

† 'Partage de l'Afrique. Exploration, Colonization, Etat Politique.' Paris: Librairie Africaine et Coloniale (André). 1898.

‡ Map, p. 336.

§ 'Razyasnenie Voprosa o drevnem techenii Amu-darii,' separate issue from the *Memoirs*, General Geography, vol. xxxiii., 1897, 256 pages, with several maps and drawings: namely, a geological map of the Transcaspian lowlands, 66½ miles to an

excellent articles of Prince Hedroits* and M. Lessar, give a pretty complete idea of the present state of our knowledge of the matter, and while they do not yet entirely settle the question, they settle it, at least, upon one important point, namely, the extension of the Caspian sea eastwards, into the Transcaspian territory, within the Post-Pliocene age. The matter has been mentioned more than once in the pages of the *Proceedings R.G.S.* and the *Geographical Journal*; but it seems to me to deserve mention once more.

Before the year 1883, it was generally believed that the river-like bed of the Uzboi represents an old bed of the Amu-daria, which turned westwards and south-westwards before reaching Lake Aral, and flowed into the Caspian sea. It is still traced as such on many maps. Another "old bed" of the Amu, the Ungus, was traced in a western direction, from Charjui across the Kara-kum desert; and a third "old bed" was supposed to be seen along the line of Akhal-teke oases which is now followed by the Transcaspian railway. A number of similar elongated ravines, which had been discovered in the Kara-kum sands, were also described as so many traces of the old beds of the great river. This is still the point of view which is held by Kaulbars, who considers that the Amu ran first in a valley at the foot of the Kopet-dagh, then was gradually deflected to the right, so as to flow along the Ungus, and finally took its present course due north-westwards from Charjui, sending, however, an arm to the west, at Pitnyak, which arm discharged its waters through the Uzboi into the Caspian sea.

The investigations and surveys of the Amu-daria expedition threw the first doubts upon this conception. While it was evident that a branch of the Amu once reached the Sary-kamysh depression (situated in the latitude of 41°–42° N. to the south-south-west of Lake Aral), it was found by no means certain that the western part to the Uzboi (from Balla-ishem westwards) should ever have been a river-bed. And when the mining engineer, A. Konshin, visited the same regions, he expressed, in 1883, the idea that, instead of tracing old beds of the Amu as far as the present eastern shores of the Caspian, we must look for a wide extension of the Caspian sea into the Transcaspian depression. The discovery of shells, now living in the Caspian, at a distance of about 100 miles inland, at altitudes of 140 to 280 feet above the present level of the Caspian, gave support to this hypothesis. It met, however, at the outset, with considerable opposition; the generalizations of Konshin were sharply criticized, and bitter polemics ensued between him and even such an explorer as M. Obrucheff, who also denies the fluviatile origin of parts of the Ungus and the Uzboi, but differs from M. Konshin upon several other points.

The volume now issued by M. Konshin bears ample traces of these polemics, but on the whole it contains a good summing up of the data upon which the hypothesis of the eastward extension of the Caspian is now based.

In order to give an idea of the present state of the question, it will, perhaps, be best to sum up (in M. Konshin's words) the opinions of the different explorers:—

"Glukhovsky and Svintsoff," he writes, "have no doubts that the Uzboi for its full length, from the present Amu down to the present shore of the Caspian, was the old bed of the classical Oxus, and that there is no other old bed of the Amu in the Transcaspian territory.

---

inch; two maps of the Uzboi, according to the surveys of 1874 and 1884; a profile of the land between Kizil-arvat and Balla-ishem; a map of the old sea-beaches of the Caspian on the slopes of the Great Balkhan mountains; a plan of the Ungus; a map of the different stages of retreat of the Caspian at different epochs, according to the author's views, and a number of small plans and drawings.

* *Izvestia*, vols. xviii. and xix.

"Hedroits, and especially Lessar, categorically maintain, on the contrary, that the Uzboi was not a direct continuation of any one of the Khiva beds of the Amu, but only discharged into the Caspian those waters of Lake Aral, which accumulated in the Sary-kamysh depression; at the same time, Hedroits believes that the Amu flowed along the Ungus, which supposition is not accepted by Lessar.

"Kaulbars and Annenkoff positively maintain that the Uzboi was the old bed of the Amu, and that not only those branches of the Amu which watered the Khiva oasis were discharged through it, but also that branch of the Amu which ran along the Ungus; the branch which ran from Charjui along the saline depressions (*shors*), now seen at the foot of the Kopet-dagh, also joined it in its western part.

"Obrucheff differs from all the above in admitting that the western part of the Uzboi, from Lake Topatian (situated due north of the Kazanjik railway station), was a Caspian gulf, while its eastern part was an old bed of the Amu; and he sees the head of the Uzboi in the modern salted lake Kapilarn-kul. He maintains, also, that there was a time when the Amu ran through the western portion of the Kara-kums and covered this region with its delta-deposits.

"Bogdanovich differs from all other explorers in considering the western Uzboi as a mere ravine due to the action of rain.

"As to me, I categorically denied in my earliest reports—first, that there are any traces of the Amu beds in the Kara-kums; and I maintained, next, that the Oxus always ran in the same direction, towards Lake Aral, as it flows now; that only on reaching the Aibughir *chink* (escarpment) of the Ust-Urt, it began to branch off west and east, discharging its waters partly into Lake Aral and partly into the Sary-kamysh lakes, but not into the Caspian; that the supposed oscillations of the Amu were limited to the Sary-kamysh cone of its delta-deposits; and, finally, that the western Uzboi was, in its lower parts, the shore of a gulf of the Caspian, and in its upper portion a channel of discharge of water from the Sary-kamysh into the Caspian sea."

As to the Ungus, Svintsoff, who has levelled part of it and has crossed the Kara-kum plateau at its western end, denies the fluviatile origin of the Ungus, and he has in that the full support of Lessar. Kaulbars and Annenkoff see in the Ungus an old bed of the Amu, and they are supported by Obrucheff, who, however, finds that the part of the Ungus which he has visited near Shiikh, has rather the aspects of an old sea-beach. He believes, nevertheless, that in olden times the Amu watered the Aklal-teke oasis, and that its delta occupied what is now the Kara-kum Sands. And, finally, Hedroits sees in the Ungus the old Arax, but adds that if marine fossils be found in the Kara-kum Sands, he will abandon this view. As to M. Konshin, he considers the Ungus as a distinct sea-beach.

In order to best emphasize the difference of views relative to the lower Amu, it may be as well to give first Obrucheff's development of Kaulbars's hypothesis in Obrucheff's own words:—

"There is reason to believe," Obrucheff wrote in his important work, 'The Transcaspian Depression,' "that in the sandy region between Merv and Charjui the Amu-daria ran not only in the Repetek valley (Repetek is the first railway station in the south-west of Charjui), but even 40 miles further westwards—that is, past Uch-aji (next railway station), where it received the Murghab. Thus, the eastern part of the Transcaspian depression, which was land when the lake Aral already existed, was watered by the Amu and its tributaries, the Murghab and the Tejen. The Amu ran at that time from Kelif, along the Kelif-Uzboi, through Uch-aji, and then it bent westward into the above-mentioned basin of the Aral-Caspian. The Murghab joined it at Uch-aji, and the Tejen a little above its mouth. When the Kara-kum basin began to contract, the lowering of its level for each 10 *sajenes* (70 feet) resulted in laying dry, along the sea-shore, a strip of land from 35 to 50 miles wide, which was covered with dunes (marine), the latter holding back the water of the river and compelling it to divide into branches amongst the dunes. The *shors* (elongated saline depressions), which are seen on the

southern border of the Kara-kum sands, are traces of these branches, which grew in length in proportion as the seashore retreated westwards. When the level of the Aral-Caspian basin was lowered by about 200 feet, the Kara-kum marine basin had nearly totally disappeared, and the Caspian sea was connected with the Aral-Sary-kamysh basin by means of a narrow strait. The Amu must have entered that strait, because one sees a series of *shors* on the way from Kizil-arvat to Igdy. When the sea-level sank another 20 feet, the Caspian became separated from the Aral-Sary-kamysh basin, and the Kara-kum strait became a gulf of the Caspian. When the level of the latter sank further by 120 feet, the Kara-kum gulf was reduced to half its former size, and its head was about the Perevalnaya station of the Transcaspian railway, and somewhat to the east of Lake Topiatan (in about 55° 40′ E. long.). Here we also find a series of *shors*, so that it would seem that three thousand years ago the Amu still crossed the Transcaspian depression and entered the Balkhany (or Kara-kum) gulf of the Caspian. Perhaps it sent off a branch near its junction with the Tejen, and this branch ran past Shiikh and Laily; but whether it was so, it is difficult to decide. However, as it is known that Khiva was founded 678 years before our era, and as Khiva could not exist without the Amu," Obrucheff concludes "that 2600 years before now one branch, at least, of the Amu must have run along its present bed, or a bed approximately similar to it, and reached the Sary-kamysh. About that time the Uzboi may have also been formed."

Although this hypothesis seems very probable at first sight, and would very well conciliate the doubtless eastward extension of the Caspian with the words of Herodotus, one must, however, recognize that under the present state of our knowledge of the Transcaspian region, it would be difficult to prove that things went in this way in the basin of the lower Amu. M. Konshin's contention is, in fact, that the Kara-kum sands are a purely marine formation—the bottom of a gulf of the Caspian, which nearly reached the Amu about Charjui. There are, he maintains, in this area no traces of fluviatile deposits, which might be considered as delta-deposits of the Amu. The Ungus is, in his opinion, the escarpment of a distinct sea-beach, and the *shors* along the Kopet-dagh are mere elongated remains of a retreating sea, having nowhere the appearance of a river-bed, and nowhere containing shells of fluviatile origin. On the contrary, the clays which fill up the lower part of the Kara-kum (between the Ungus and the cases at the foot of the Kopet-dagh) are exact counterparts of the clays which are seen in the western part of the same depression, where they contain shells identical with those which are now living in the Caspian sea. The surface of the Kara-kum Sands, which are all covered with hillocks and elongated rows of hills, 150 to 200 feet high, consisting of dirty yellow sand lying upon hard red clays, and intersected with deep salt-bearing depressions (*shors*) and hard *takyrs* of salted clay, is certainly quite different from the alluvial plains which one is accustomed to find in the deltas of mighty rivers.

As to the marine shells, M. Konshin has found, as is known, shells of *Cardium*, *Dreyssena*, *Neritina*, and *Hydrobia*—all living now in the Caspian sea—on a wide area, from the seashore to the 56th degree E. long., and up the Uzboi as far as the Sary-kamysh depression. They lie on the surface, and consequently have not been covered by subsequent delta-deposits of the Amu. In the Balkhan mountains they are found along distinct sea-beaches at altitudes of from 140 to 280 feet above the present level at the Caspian—these altitudes proving that in Post-Pliocene times the Caspian must have extended far inland over the Kara-kums. Moreover, the Ungus represents, M. Konshin remarks, an admirable sea-beach escarpment, having a length of 270 miles, and separating the Pliocene clays of the Kara-kum plateau from the Post-Pliocene sands and clays of the lower-lying Kara-kum Sands.

As to the Uzboi, which had been represented by the first surveyors, in 1874, as a river-bed, there is no doubt whatever at the present time, since it has been carefully

mapped, levelled, and explored in 1883, that it never could have been a river-bed. The bottom of the Sary-kamysh depression lies much deeper than the bed of the Uzboi at Igdy, and altogether the Uzboi consists of two distinct parts—the Sary-kamysh basin which contains Amu-daria and Aral shells, and the southern and western part which contains marine Caspian shells.

To sum up the question, it may thus be accepted as nearly certain that there was a time in the Post-Pliocene age, when a long gulf of the Caspian sea protruded eastwards, nearly as far as the longitude of Merv, covering the Kara-kum sands (but not the Kara-kum plateau, in the north of the Ungus. At the same time another branch of the same gulf protruded northwards, along the Uzboi, probably as far as the Sary-kamysh. And it was at the same period that a long gulf of the Caspian extended up the present valley of the Volga nearly as far, or maybe even further than Kazañ. The question, however, remains, whether there was a time when the Amu entered this gulf, so as to join the Murghab. Probable though this supposition appears from the general configuration of the land, it has still to be proved by more detailed research.

The next question, which also can only be solved by further detailed exploration of the Kara-kum sands, is, whether the Amu continued to flow or to send a branch in a westerly direction when the Kara-kum gulf began to dry up. I will permit myself to remark that the mere presence of *shors* and *barkhans* does not prove the existence of such a bed, so long as the existence of true alluvial delta-deposits has not been ascertained.

And, finally, I would like to suggest another important question—whether the junction between the Caspian and the Aral was maintained only by way of the Uzboi and the Sary-kamysh depression? or, as appears to me very probable, there existed a northern connection between the two basins, either in an eastern direction from the Mortvy Kultuk gulf of the Caspian, along the yet imperfectly known chain of lakes which is marked on our maps, or somewhere in a south-eastern direction from the same gulf. An exploration of these chains of lakes seems to me quite urgent.

Only detailed exploration will give the necessary data for answering these important questions. In the meantime, we can only express our deep gratitude to the explorers of this interesting region, and especially to Prince Hedroits and M. Konshin who have made a serious step in the solution of the Amu-daria problem, by showing that its solution must be looked for, not only in changes of the bed of the river, but especially in an eastward extension of the Caspian sea itself.

THE MONTHLY RECORD.

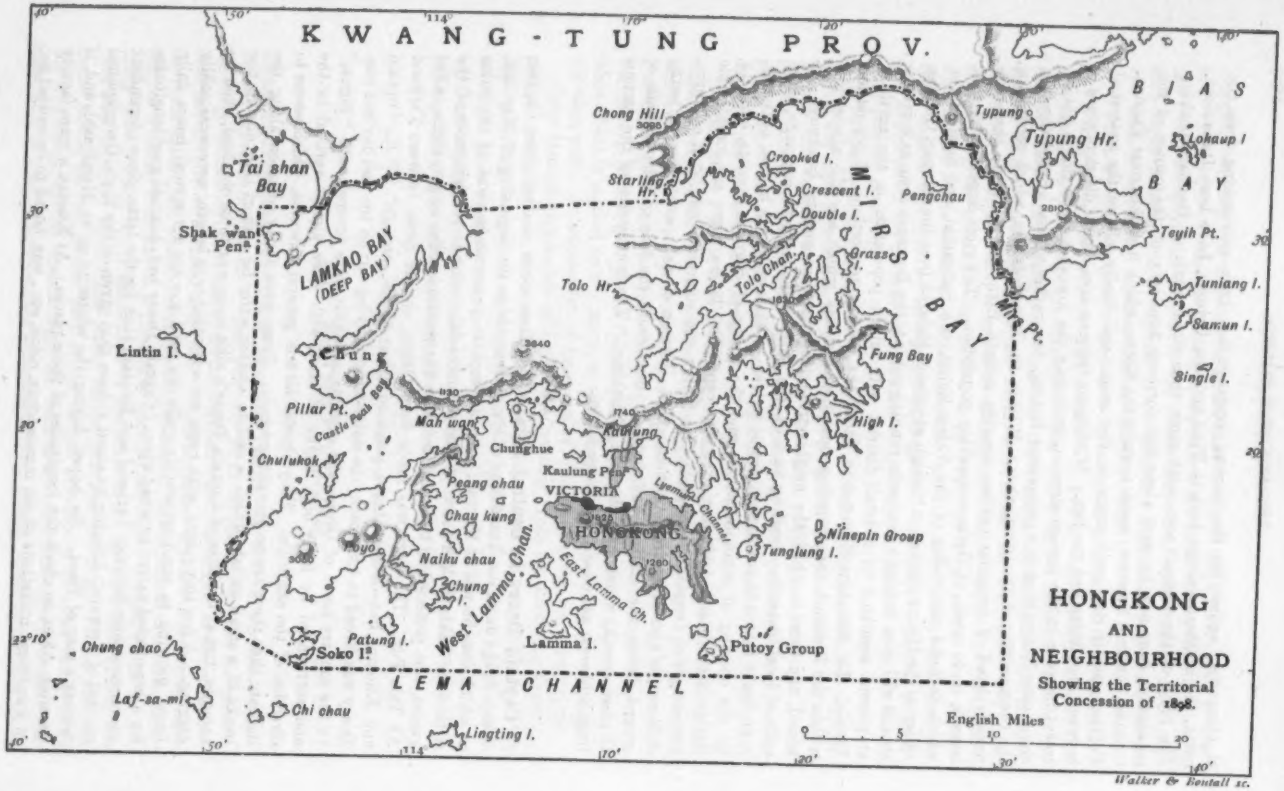
EUROPE.

Language Boundaries in the Grisons and Ticino.—In the fifth number of *Petermanns Mitteilungen* for the current year, Dr. M. C. Menghius discusses the present language boundaries in the east of Switzerland, and their variations, as shown by the censuses of 1860, 1870, 1880, and 1888. Three languages are there represented—the German, Italian, and Rhæto-Romansh, the last-named, in its present extension, forming but a scanty remnant of a once more widely distributed tongue, which has for many years yielded before the inroads of the other two. At its widest extent, the Romansh occupied almost the whole region between the upper Rhone and the upper Drave, *i.e.* the greater part of the Roman province of Rhætia; but even at the beginning of the middle ages its boundaries were undergoing contraction, especially in Tirol, where German colonies occupied points, important strategically

or otherwise; and whilst the German language has been encroaching from the north, the southern valleys, both in Tirol and the Grisons, have been Italianized. The limit of the compact area, with more than 80 per cent. of German-speaking population, runs now in part along the northern boundary of the canton of the Grisons, bending, however, south towards the Rhine, which it strikes near Tamins. Further east it runs still more to the south, and finally follows the watershed between the Rhine and the Inn. Within the German area, some districts show a recent increase in the foreign element, including the Romansh; but this is not by any means likely to gain a permanent footing, but rather to lose ground through the Germanizing of the immigrants. Within the Romansh area, which occupies a narrow band of irregular outline running mainly from east to west, there are islands, so to speak, of German-speaking population. The most important is that which includes the valley of the Valser Rhine, the Safienthal, and most of the valley of the Hinter Rhine. Although at present isolated from the compact German area, it will soon become a peninsula running out into the Romansh area, as it is only at present separated by a small district with mixed population to the north of Thusis. Dr. Menghius discusses in detail the present proportions of population within the Romansh area, pointing out those districts which are still almost unmixed, and those in which the neighbouring languages are making headway. In spite of local instances of falling back on the part of the German language, there is no doubt that it is now making rapid strides—a state of things helped, of course, by the opening of communications and the influx of German tourists, etc. In Italian Switzerland, including even the canton of Ticino, there are considerable percentages of Germans, though in that canton one commune only, that of Gurin, or Bosco, is almost entirely German. The German element even here is losing ground before the Italian, and must in time share the fate of other islands of German speech, which have become Italianized. The boundaries of the various linguistic areas are clearly shown on a map.

ASIA.

Captain Deasy in Central Asia.—The latest news received from Captain Deasy brings down our knowledge of his movements to the beginning of May last, at which date he was at Khotan. An attempt to penetrate to some of the ruins within the Takla Makan desert proved unsuccessful, owing to the ignorance of the guides, who professed to be acquainted with the position of the largest ruins, called Ak Tala Tuz. The start was made from Guma, on the route between Yarkand and Khotan, but on reaching a point in about 38° N. and 78° 27′ E., Captain Deasy was forced to turn back, the water-supply giving out on the last day but one. In the country north of Guma, the circular sandhills were covered with "jilgun," and surrounded by fairly high banks of sand, with sides almost vertical in the direction of the sandhills. They showed no one general direction, which seems to indicate that there are no prevailing winds. Trees were fairly common along the banks of a small nullah, which is said to contain water for a short time during the summer, but at the time of Captain Deasy's visit none was to be obtained, even by digging. A few tiny plants, with roots but a few inches in length, were occasionally found growing in sand, apparently quite dry, and too hot for several hours daily for a bare-footed native to stand upon. Captain Deasy had obtained good longitudes by chronometer between Yarkand and Khotan, that for the latter place (dependent on that of Yarkand) differing by about 4′ from that given on the Royal Geographical Society's map of Tibet. He hoped during the winter to go to Maralbashi, and, if possible, Aksu, to check the longitudes of those places. At Khotan a manufactory of fraudulent imitations of old manuscripts, coins, etc., was found to be carried on.


KWANG-TUNG PROV.
Chong Hill
Typung
Typung Hr.
Lohaup I
Tai shan Bay
Starling Hr.
Crooked I.
Crescent I.
Pengchau
Double I.
Shak wan Pen.
LAMKAO BAY (DEEP BAY)
Teyih Pt.
Tolo Hr.
Tolo Chan.
Grass I.
Tuniang I.
Samun I.
Lintin I.
Chun
Fung Bay
Single I.
Pillar Pt.
Castle Peak Bay
Mah wan
Kaulung
High I.
Chuluhok I.
Chunghue
Kaulung Pen.
Peang chau
VICTORIA
HONGKONG
Chay kung
Lyemun Channel
Ninepin Group
Tunglung I.
Naiku chau
Chung I.
East Lamma Ch.
West Lamma Chan.
Patung I.
Soko Is.
Lamma I.
Putoy Group
Chung chao
LEMA CHANNEL
Laf-sa-mi
Chi chau
Lingting I.
English Miles
HONGKONG
AND
NEIGHBOURHOOD
Showing the Territorial Concession of 1898.
Walker & Boutall sc.

Extension of British Territory at Hongkong.—By a convention signed on June 9, the Chinese Government has leased to Great Britain for ninety-nine years certain territories on the mainland opposite Hongkong, which were needed both to assure the proper protection of the colony, and to provide room for commercial expansion, the island of Hongkong having proved too cramped an area for the requirements of its immense trade. The concession includes, as shown on the accompanying map (based on official information), the whole of the peninsula opposite Hongkong as far as a line joining Deep bay and Mirs bay, as well as the island of Lan-tao. The waters of both bays are included in the lease, but their northern shores are retained by China. The total area is about 200 square miles, all of which will be under British jurisdiction, except within the native city of Kau-lung. China reserves the right to use the leased waters for her own ships, whether belligerent or neutral.

Samarkand.—Most of the statistical committees of Russia publish every year their year-books (*Spravochnaya Knizhka*), which, besides various statistical and directory information, usually contain very valuable geographical and statistical materials. Most of these editions become, after a very few years, bibliographical rarities, which can only be obtained at the Imperial Library and at the Academy of Sciences at St. Petersburg. The fifth volume, for 1897, of the *Spravochnaya Knizhka* of the Samarkand province, edited by M. Virsky, secretary of the Local Statistical Committee, belongs to this category of useful publications. It contains a sketch of the wine industry and vine-growing, and of the cotton-growing in the province, by I. Slutskiy; a paper on the raw cotton industry and its relations to agriculture, by M. Virsky; on the cotton-cleaning works, by I. Slutskiy; and on various industries of the province, by N. Kirpichnikoff. We find next a description of the Yany-kurgan canton, its economical conditions and customs, by V. Nycrovetskiy; the crops in 1894 in parts of the Samarkand district, by M. Virskiy; on irrigation by the natives, by Petrovsky; on charitable institutions among the natives, by V. Nalivkin; on Samarkand legends, by V. Vyatkin; on the old Samarkand vilayet, and on the old graves in the province, by M. Virskiy and V. Chertoff; and the annals of the province for 1896.

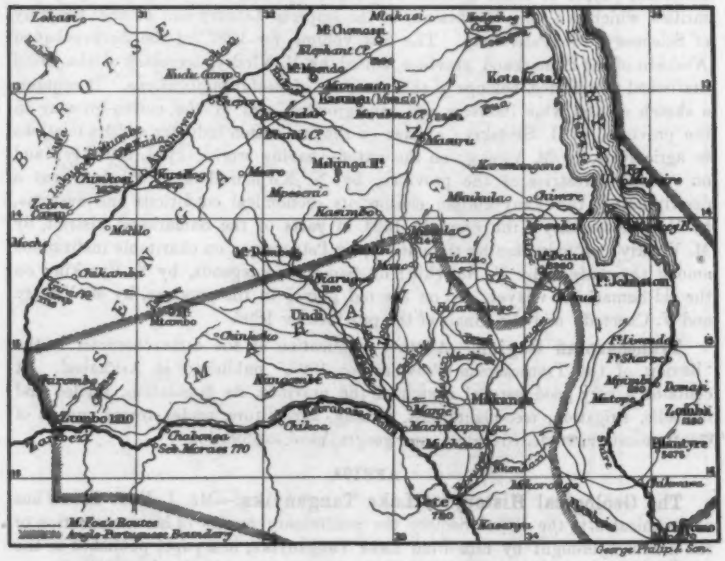
Transcaspian Region.—Another publication of the same character is the 'Review of the Transcaspian Province for 1893,' published at Askhabad. It contains a very good general sketch of the province, its population, settled and nomadic, irrigation, tree-plantations, mining, agriculture, trades, towns, means of communication, trade, education, and geographical exploration.

AFRICA.

The Geological History of Lake Tanganyika.—Mr. J. E. S. Moore has communicated to the Royal Society the preliminary results of his examination of the molluscs brought by him from Lake Tanganyika, in a paper published in the *Proceedings* of that body (vol. lxii. p. 451). Before considering the evidence as to the former history of the lake supplied by the morphological investigation of the organisms, he states the general results of his inquiry to have been—(1) The discovery of two entirely new generic forms in addition to the six genera of quasi-marine gasteropoda, the shells of which were previously known; (2) the proof that the invertebrate fauna includes a large number of widely separated animal types, all possessing the same quasi-marine affinities. Whereas the genera of molluscs which occur in the African fresh waters are very constant over an immense area (the whole Nyasan series has, *e.g.*, been recorded from the Victoria Nyanza), there is in Tanganyika a distinct fauna superadded to the normal African lake fauna as a whole. This strangely isolated group of organisms—which includes, besides the

Medusa and molluscs, two prawns, deep-water crabs, etc.—is designated by Mr. Moore *halolimnic*. None of these animals can be directly associated with any *living* oceanic species, so that the halolimnic fauna, wherever it came from, must be old. It is, besides, inconceivable that delicate organisms like the medusa should have found their way up the effluent as it now exists, while the molluscs are almost exclusively deep-water forms. The conclusion which might naturally be drawn from these facts, is entirely supported by the recent anatomical examination of the molluscs, which shows them to possess the characters of several modern marine types, and it must, therefore, be supposed that the Tanganyika region must, as suggested by Thomson, have once been in connection, either on the east, west, or north, with a deep arm of the sea. This is, of course, entirely opposed to the views, which have found favour in many quarters, of the permanence of African terrestrial conditions, but these, Mr. Moore considers, are at best based merely on the absence of definite facts of any kind relating to the past history of the interior.

M. Foa's Journey across Africa.—The account given by M. Foa in March last, before the Paris Geographical Society, is printed in the *Comptes Rendus* of that



SKETCH-MAP ILLUSTRATING M. FOA'S JOURNEYS IN BRITISH CENTRAL AFRICA.

Society, No. 3, 1898. As his route led through no large area of previously unknown country, the additions which he has made to our knowledge of Central African geography are necessarily confined, in the main, to matters of detail, and these could, of course, not be entered into very fully within the limits of a lecture. Certain portions of his narrative however supply new information, and the ethnological facts, the collection of which was one of the primary objects of his mission, are of some interest. The first two years were spent in exploring the region between Lake Bangweolo, Lake Nyasa, and the Zambezi. This had been the scene of former journeys, the results of which have already been published by M. Foa, and he accordingly

passes rapidly over this part of his explorations. He seems to have added somewhat to our knowledge of the Loangwa, or Aroangwa, as he prefers to call that important tributary of the Zambezi, and of the country to the north of the Zambezi, between Zumbo and Tete. His claim to be the first to survey the left bank of the Zambezi below Zumbo by land can hardly, however, be substantiated, as Drs. Livingstone and Kirk followed the same route along the north bank in 1860. M. Foa made an attempt to reach Bangweolo by a route not widely diverging from Thomson's, but was forced to turn back before reaching Chitambo by the swampy nature of the country. The last-named traveller in the dry season had found nothing but thin forest and grass. After carrying out some astronomical observations on Lake Nyasa, M. Foa started early in 1897 on the journey which finally took him across to the west coast. He deviated from the usual caravan route between Nyasa and Tanganyika in order to explore the headwaters of the Congo, tracing down the Chozi to its confluence with the Chambezi, but apparently not introducing any striking difference in their delineation on the map. The Awemba who inhabit this region will, M. Foa thinks, give the British authorities much trouble when an attempt is made to bring their country under control. After a voyage up Lake Tanganyika, which made a striking impression on the traveller, and of whose size he gives an exaggerated account, M. Foa made an attempt to penetrate Urua by a route between those of Thomson in the north, and Livingstone, Reichard, etc., in the south. But after a difficult march of 130 miles, which brought him to the sources of the Luizi, a tributary of the Lukuga, he found the country ahead in a state of revolt, and was obliged to return to Tanganyika, descending towards the Lukuga valley in the north. He was thus obliged to continue his journey by the well-known route through the Manyema country to Nyangwe, and down the Congo to its mouth. During his journey M. Foa took no less than eight hundred astronomical observations, which should prove a valuable aid towards the rectification of the map of the regions traversed.

M. Foa's Surveys.—The following is a *résumé* of the principal surveys executed by M. Foa during the years 1893–97. In 1893–94, the upper courses of the Revugwe, Mkombazi, and Nkondazi, between the Zambezi and Lake Nyasa, were explored; also portions of the Chiritte, Mavuzi, Loangwe, Luya, and Kapoche, as well as the mountainous districts containing their sources, and the north bank of the Zambezi between Kebra-basa and Zumbo. In 1895–96, various journeys were made in Angoniland and Mpeseni's country, including one from Missale to the Aroangwa river; a portion of the upper course of the latter being carefully mapped, while west of it M. Foa's itinerary reached to a point only a couple of days south of Lake Bangweolo. Additions were also made to our knowledge of Mwazi's and Chikuzi's countries, nearer Lake Nyasa, while detailed surveys were made of the Machinga mountains and the country along the Anglo-Portuguese boundary west of the Shire. In 1897, the position of the principal places on the west coast of Lake Nyasa were determined, the sources of the Aroangwa visited, and the hydrography of the principal streams flowing westward from the Nyasa-Tanganyika plateau elucidated, the courses of the Chozi and (in part) of the upper Chambezi being surveyed. Lake Tanganyika was circumnavigated, its shores being carefully examined and mapped, and soundings taken. In the attempt to penetrate Urua, the Mitumba mountains (4000 to 8000 feet) were climbed, and the Nyamba river visited; while, on the return to Tanganyika, the Lukuga was struck about three days from the lake. During the subsequent march to Nyangwe, the source of the Luama or Lugumba was visited, and its course rectified on the map, while observations, both for latitude and longitude, were made along the whole course of the Congo below Nyangwe. The instruments employed were the theodolite, sextant,

two chronometers, boiling-point, and maximum and minimum thermometers, and mercurial barometer. Extensive ethnographical and natural history collections were made, and about five hundred photographs taken.

M. de Bonchamps' Expedition between Abyssinia and the Nile.—Although unsuccessful as regards its political object, this expedition seems to have added somewhat to our knowledge of the country about the headstreams of the Sobat, first explored by Captain Bòttego (*Revue Française*, August, 1898). Leaving Addis Ababa on May 17, 1897, M. de Bonchamps proceeded to Gore, beyond which the Abyssinian plateau falls towards the Baro, one of the branches of the Sobat. Failing to obtain help for his further journey he moved north-west to Bure, a commercial centre frequented by the blacks of the Sobat valley. Thence he sent two of his companions to reconnoitre a passage from the plateau to the plain of the Sobat, lying over 4000 feet below. They were, however, arrested on attempting to cross the frontier, and had to return to lay their complaint before Menelik. Rejoining M. de Bonchamps, they found that he had reorganized his expedition, incorporating the *personnel* of the party of Captain Clochette, who had lately died. The Baro was now reached without hindrance, and was crossed on a raft made of faggots. When full it has a current as impetuous as that of the Rhone. The Yambos, a very black race, inhabit both banks. The expedition followed the left bank along a sort of natural dyke formed by its sediment, the country being inundated, so that the native huts are built on small eminences. Crossing two tributaries of the Baro, which rise in the Mocha plateau in the direction of Lake Rudolf, the expedition reached a wide marshy plain, completely uninhabited; and at length a swampy lake formed by the junction of the Baro with the Juba, partially explored by Bòttego. The latter was over 150 yards wide, and had a strong current and considerable depth. Boats being unobtainable, and the expedition in great straits, a return to the plateau was necessary. The Abyssinians had suffered severely from the climate of the lowlands. M. de Bonchamps was subsequently attacked by hæmaturic fever, and compelled to abandon his projects of further exploration.

Massacre of Captain Cazemajou's Expedition.—According to the news published by the *Politique Coloniale* (July 30 and 31), the French expedition to the southern borders of the Sahara, north of Sokoto, has met with a disaster, having been attacked by the natives of Zinder. Six Senegalese *tirailleurs* are reported killed, and grave fears are expressed as to the safety of Captain Cazemajou himself. The expedition was fitted out by the Comité de l'Afrique Française for the purpose of surveying the line from Say to Barrawa, and also of inquiring into the rumours regarding survivors of the Flatters mission, which had, in 1895, been set on foot by the ex-interpreter Jebari, who in that year published a work entitled 'Les Survivants de la Mission Flatters.' M. Cazemajou's report on the subject was published in the July number of the *Bulletin de l'Afrique Française*, his general conclusions being (1) that there were never any survivors of the Flatters mission either at Thaua or any other place in Adar; (2) that Jebari never reached Adar. He also examines various statements of Jebari in detail, finding many inaccuracies in them. Captain Cazemajou's expedition was expected to be rich in scientific, as well as political, results. In the latter direction, one of its objects was the establishment of friendly relations with Rabah in Bornu.

Formal Opening of the Congo Railway.—The ceremony of formally declaring the Congo railway open to traffic from Matadi to Stanley Pool took place during the first week in July. A large number of European visitors were present, including delegates from foreign governments. According to a communication from M. Tardieu, President of the Press Committee, published in the *Mouvement*

Géographique for July 17, the proceedings were carried through in four stages, the company traversing the line in four days, while fêtes were held at Boma, Matadi, Tumba, and Léopoldville. A banquet was held at the last-named place on July 6, at which M. Fuchs, the governor-general, formally declared the line open, Baron von Danckelmann afterwards expressing his congratulations on the great work accomplished in the name of the foreign delegates. As a result of the opening of the line, it is thought that the administrative centres, both of the State and the railway, will be shifted further from the coast. Either Léopoldville, or a position near the falls, will possibly take the place of Boma as capital.

Projected Balloon Voyage across the Sahara.—A project has been set on foot by Lieut. Hourst, the explorer of the Middle Niger, for the exploration of the Central Sahara by means of a balloon voyage. Accompanied by an aeronautic expert, M. Léo Dex, and by Captain Dides, M. Hourst proposes to start from the Gulf of Gabes, and hopes, by the aid of the north-east trade-wind, to be carried across the desert towards the Niger bend. The capacity of the balloon will be 13,000 cubic metres (450,000 cubic feet), and it is said that it will be able to remain aloft for forty to sixty days. A steel cable 4500 feet long will maintain connection with the surface of the earth, and might be utilized to give an electric shock to any natives who might attempt to stop the balloon. Preliminary trials with the latter will be made before the explorers set out.

Telegraph Line across the Congo State.—Among the schemes recently set on foot for the opening up of communications in Central Africa, that for a telegraph line across the whole breadth of the Congo State, from Boma to Lake Tanganyika, is certainly one of the most important. The *Mouvement Géographique* for July 31 gives some details regarding the scheme, which has been under consideration by the State authorities for some years. A beginning has already been made by the construction of a line towards Stanley Pool, now almost completed, while work has also been begun between the Pool and Kwa-mouth. Three million francs have lately been voted for the prosecution of the enterprise, and it has been decided to commence work also from the east, for which purpose an expedition has been organized on a large scale, and was to leave Brussels on August 20. Its leader is Mr. Mohun, formerly United States Consul on the Congo, who accompanied Captain Hinde in his exploration of the Lualaba above Nyangwe, and he will be supported by nine Europeans, including Mr. Thornton, an experienced engineer, who has assisted in telegraph construction in India, Australia, and South Africa. The expedition will proceed to Tanganyika by the Nyassa route. In its central part, the projected line will follow the great bend of the Congo.

AMERICA.

Dr. Steffen's Expedition.—The seventh number of *Petermanns Mitteilungen* also contains information as to Dr. Steffen's movements. Accompanied by Lehrer Krautmacher and a Chilian geographer named Sands, he entered the Poyehuapi fiord in about 44° 30′ S., discovering a large hitherto unknown river, up which he pushed his way. In addition to difficulties from rapids, excessive rain much hindered his progress. On March 12 he was on the Rio Cisne of Simpson, and had before him a cleft in the mountains, through which he hoped to penetrate to the Patagonian plateau. He had been unable to find the Lago La Plata, shown on Argentine maps as less than 20 miles from the Chilian coast, its supposed place being occupied by a high mountain. Presumably, it lies further east. Some fears have been entertained as to the safety of Dr. Steffen, but the latest news reported his safe arrival at Lake Nahuel-huapi.

AUSTRALASIA AND OCEANIC ISLANDS.

Sir W. MacGregor's Explorations on the North Coast of New Guinea.—In a report, dated July 1, 1897, Sir W. Macgregor gives an account of his proceedings earlier in the year in the neighbourhood of the Mambare. Some new geographical work was accomplished by the ascent of the stream which enters the sea just within German territory. It has before been known as the Ikore, but its correct name proved to be the Gira. Its mouth has a bar which cannot be passed when there is much wind, or a swell from the south-east. At less than a mile from this the river is within British territory, but a loop higher up is again on the German side of 80° S. lat. The highest point visited was some 15 geographical miles inside the British colony, the stream coming from the south-west, chiefly from Mount Albert Edward. The country on its banks was inviting, with many villages and gardens. The staple food is *taro*. Trials revealed the presence of gold in the river-shingle in a greater degree than has been noticed in any of the other streams—a fact easily accounted for by the origin of the Gira in Mount Albert Edward. Before turning, rapids were encountered, the river being bounded by exceedingly steep sandstone hills, covered by forest trees. Sir W. MacGregor suggests that, in order to utilize it for commercial or travelling purposes, the river should be made free to both the German and the British colonies.

Explorations in the Owen Stanley Range.—The *Bollettino* of the Italian Geographical Society for July contains the account of an expedition across the Owen Stanley range by Signor A. Giulianetti, which adds considerably to our knowledge of its geography. The writer was, early in 1897, commissioned by Sir W. MacGregor to establish a dry-weather station on Mount Scratchley or the Wharton range, chiefly, it seems, for the purpose of collecting natural history specimens. His route led up the valley of the Vanapa from the south coast, but, instead of continuing eastward to the neighbourhood of Mount Victoria, struck more to the north in the direction of Mount Thynne, whence a ridge was found to continue without interruption to the Wharton range, north-east of Mount Scratchley. Here a station was formed at an elevation of 11,000 feet, the climate being found to be extremely healthy. Both the geological formation and the fauna and flora were found to be practically the same as on Mount Scratchley, where collections had been made in the preceding year, so that comparatively few novelties presented themselves. The temperature rarely rose above 60° Fahr. in the middle of the day, while at 7 a.m. it would fall as low as 36°, or even to freezing. The prevailing winds were from the north-east and south-west, and rain fell in large quantities, only twenty days being dry during the stay on the range. Frequent visits were made to the station by natives from both sides of the watershed, which communicate by three paths across the range. Another path is said to exist to the east of Mount Victoria. An attempt to push northward to Mount Albert Edward failed on account of the dense vegetation and the broken nature of the ridge. Thick mist also increased the difficulties. From the last camp a view was obtained of some huge mountains towards the north, between Mounts Albert Edward and Yule. Signor Giulianetti has discovered that the principal branch of the Vanapa does not come from Mount Victoria, but from the north, from the Wharton range and Mount Albert Edward. It therefore breaks through the range, hitherto shown on our maps as extending west of Mount Thynne. Its upper valley is densely inhabited, and has an excellent climate, recalling that of Europe. The natives are robust and well disposed, and possess large food-supplies. This neighbourhood would form an excellent station for a naturalist. Sir W. MacGregor visited the station on the Wharton range in October last, taking a fair number of theodolite observations.

The Central Australian Deserts.—A careful study of the deserts of Central Australia, their characteristics and causes, on similar lines to that carried out by Dr. Schirmer for the Sahara, has lately been contributed by M. G. Lespagnol to the *Annales de Géographie* (Nos. 31–33, 1898). It is based on a thorough examination of all the available authorities, copious references to whose works are given in footnotes. M. Lespagnol divides the subject into three parts—(1) the relief and other characteristics of the surface; (2) the climate; and (3) the hydrographic features of the region. In the first section, he points out the general uniformity of the surface owing to the slight disturbances of the crust in recent geological times, and the fact that the one important mountain system of Australia is eccentric. He also traces the denuding agents at work, and the peculiar character of the surface features to which they give rise. The second section is perhaps the most important, as presenting a study of the causes to which the desert character of Central Australia is due. These he shows to be extremely complex, and to interact in a striking way on each other, so that it is impossible to single out any one as the primary cause. At the outset he lays stress on the disturbance introduced into the regular *régime* of atmospheric phenomena by the existence of extensive land masses. The extremes of temperature characteristic of a continental climate are very pronounced in Central Australia, and react in turn on the direction of the winds. The prevalence of high pressure in winter and low pressure during summer brings about a system of outflowing or inflowing air-currents, and while the former are necessarily dry, the latter do not bring the humidity which might be looked for, owing to the predominance of the dry descending winds from the south-east over these from other directions, and to such topographic and structural causes as the absence of interior relief, the presence of depressions, permeable strata, and so forth. The author discusses the amount of rainfall, and concludes that Central Australia receives more than the Sahara, but less than the Kalahari; it may therefore be said to present a medium desert character. His explanation of the causes of the Australian desert is the exact counterpart of that given by M. Schirmer for the Sahara, though he does not dwell upon their similarity. Nor does he enter into the question why these regions are more exposed to desert-forming conditions than other land masses within the same latitudes. In the third section he gives a clear description of the hydrographic features of Central Australia, dealing successively with permanent running-water creeks, evaporation-basins, and subterranean waters.

POLAR REGIONS.

The Belgian Antarctic Expedition.—Grave fears have been expressed in some quarters as to the fate of Lieut. de Gerlache's expedition, which sailed for the Antarctic in August, 1897. The ship was last heard of from the straits of Magellan, whence conflicting rumours of disaster reached Europe early this summer. According to the original programme, the *Belgica* was to proceed to the neighbourhood of Graham's land, and thence eastward, arriving in Melbourne in April last. We learn, however, from Colonel de Gerlache, father of the commander of the expedition, that circumstances are known to have caused an alteration in the plans, and as the ship was fully provided for wintering, having provisions for three years on board, it may be hoped that the fears which have been expressed may be groundless.

GENERAL.

Monument to Francis Garnier.—A monument raised by public subscription to the memory of the great explorer of Indo-China, was unveiled in Paris on July

14 last, by M. Trouillot, French colonial minister. Among those present at the ceremony were M. Milne-Edwards, president of the Paris Geographical Society, who made over the monument to the city of Paris in the name of the committee by which the arrangements were carried out; Prince Roland Bonaparte; M. J. Dupuis, himself well known as an explorer in Indo-China; and others interested in French colonial expansion. M. Milne-Edwards stated that subscriptions had come in, not only from all parts of France, but even from remote villages in Cochin-China, where the memory of Garnier was revered; other speeches were made, pointing out the potent influence exercised by the deceased traveller on the fortunes of France in Asia. The statue, the work of a well-known sculptor, is said to be a successful one. It occupies a position in the Place de l'Observatoire.

Russian Geographical Bibliography.—Geographers will be glad to learn that the Russian Geographical Society now gives in its *Izvestia* a full bibliography of all that enters its library, on exactly the same plan as the bibliography in this *Journal*.

A University Degree in Geography.—Mr. A. J. Herbertson, lecturer on geography in the Heriot-Watt College, Edinburgh, whose report on geographical education to the British Association has recently been referred to in these pages, has obtained the degree of Ph.D., *multa cum laude*, in geography, at the University of Freiburg in Baden. Dr. Herbertson's thesis was on the "Distribution of Rainfall over the Earth's Surface," a subject which he has thoroughly investigated while compiling the rainfall maps for the great physical atlas about to be published by Mr. Bartholomew.

GEOGRAPHICAL LITERATURE OF THE MONTH.

Additions to the Library.

By HUGH ROBERT MILL, D.Sc., *Librarian*, R.G.S.

The following abbreviations of nouns and the adjectives derived from them are employed to indicate the source of articles from other publications. Geographical names are in each case written in full:—

A. = Academy, Academie, Akademie.
Ann. = Annals, Annales, Annalen.
B. = Bulletin, Bollettino, Boletim.
Com. = Commerce, Commercial.
C. Rd. = Comptes Rendus.
Erdk. = Erdkunde.
G. = Geography, Geographie, Geografia.
Ges. = Gesellschaft.
I. = Institute, Institution.
Iz. = Izvestiya.
J. = Journal.
M. = Mitteilungen.
Mag. = Magazine.
P. = Proceedings.
R. = Royal.
Rev. = Review, Revue, Revista.
S. = Society, Société, Selskab.
Sitzb. = Sitzungsbericht.
T. = Transactions.
V. = Verein.
Verh. = Verhandlungen.
W. = Wissenschaft, and compounds.
Z. = Zeitschrift.
Zap. = Zapiski.

On account of the ambiguity of the words *octavo*, *quarto*, etc., the size of books in the list below is denoted by the length and breadth of the cover in inches to the nearest half-inch. The size of the *Journal* is 10 × 6½.

EUROPE.

Alps. Ball—Coolidge.

The Alpine Guide. The Western Alps. By the late John Ball, F.R.S., etc. A New Edition reconstructed and revised on behalf of the Alpine Club by W. A. B. Coolidge. With New and Revised Maps. London: Longmans & Co., 1898. Size 7½ × 5½, pp. l. and 612. *Price* 12*s*. *Presented by the Publishers.*

This minute and careful guide to mountaineers in the Western Alps is accompanied by a bibliography of the region in question, a list of Alpine publications, of maps, and a series of new maps specially prepared.

Austrian Alps.

Sechster Jahres-Bericht des Sonnblick-Vereines für das Jahr 1898. Wien, 1898. Size 11½ × 8, pp. 38. *Plates. Presented by the Sonnblick Verein.*

Report of the society which maintains the highest meteorological station in Europe.

Austrian Alps. **Penck.**

Oberlercher's Glocknerrelief. Von Prof. Dr. Albrecht Penck. Wien, 1896. Size 7½ × 4½, pp. 12. *Presented by the Author.*

An account of Herr Oberlercher's model of the Gross Glockner, which will be specially noticed.

Austria—Istria. **Martel.**

Sur la Foiba de Pisino (Istrie). Par M. E. A. Martel. (From the *Comptes Rendus* of the Academy of Sciences, 1896.) Size 11 × 9, pp. 4. *Presented by the Author.*

France. *B.S.G. Com. Bordeaux* **21** (1898): 213–217. **Duffart.**

La magnétite des dunes de Gascogne. Par Charles Duffart.

Arguments designed to show that the region of the *landes* is, from the geological point of view, to be referred to the Quaternary alluvium.

France. **Baedeker.**

South-Eastern France, including Corsica. Handbook for Travellers. By Karl Baedeker. Third Edition. With 15 Maps, 14 Plans, and a Panorama. Leipsic: Karl Baedeker. London: Dulau & Co., 1898. Size 6½ × 4½, pp. xxiv. and 322. *Presented by Messrs. Dulau & Co.*

France—Aveyron. **Durand and Laponge.**

B.S. Languedoc. G. **20** (1897): 285–315, 461–476.

Matériaux pour l'Anthropologie de l'Aveyron. Par le Dr. Durand (de Gros) et G. de Laponge. *With Map.*

The map shows the average cephalic index in each canton of the department.

France—Chamonix. **Whymper.**

Chamonix and the Range of Mont Blanc. A Guide by Edward Whymper. Third Edition. London: John Murray, 1898. Size 7½ × 5, pp. xiv. and 206. *Maps and Illustrations. Price* 3*s. Presented by the Author.*

This valuable guidebook has been revised and brought up to date very thoroughly.

France—Mont-Blanc. *B.S. Topographie France* **21** (1897): 86–96, 136–143. **Guyot.**

Carte du Massif du Mont-Blanc au 20,000e. Par M. le Capitaine Guyot.

An account of the method of surveying, trigonometrical and photographic, adopted in the preparation of the map.

France—Seine. **Lemoine and Babinet.**

Ponts et Chaussées. Service hydrométrique du Bassin de la Seine. Observations sur les Cours d'Eau et la Pluie centralisées pendant l'année 1896. . . . Par M. G. Lemoine et M. Babinet. Versailles. Size 17 × 11. *Diagrams.*

Résumé des observations centralisées par le Service hydrométrique du Bassin de la Seine pendant l'année 1896. Par M. Babinet. Versailles, 1897. Size 11 × 7, pp. 56.

Germany—Alsace. **Reuss.**

L'Alsace au dix-septième siècle au point de vue géographique, historique, administratif, économique social, intellectuel et religieux. Par Rodolphe Reuss. Tome Premier. Paris: É. Bouillon, 1897. Size 10 × 6½, pp. xxxvi. and 736.

Germany—Eifel. *Meteorolog. Z.* **15** (1898): 169–174. **Polis.**

Beiträge zur Kenntniss der Niederschlagsverhältnisse der Eifel. Von P. Polis. *With Map and Diagram.*

Greece. **Buondelmonti.**

Publications de l'École des Langues Orientales vivantes. Quatrième Série—Tome xiv. Description des Iles de l'Archipel. Par Christophe Buondelmonti. Version Grecque par un anonyme. Publiée d'après le Manuscrit du Sérail, avec une Traduction Française et un Commentaire. Par Émile Legrand. Première partie. Paris: E. Leroux, 1897. Size 11 × 7½, pp. xl. and 258. *Maps.*

Greece—Photographs. **Philippson.**

Sammlung von Photographien aus Griechenland. Aufgenommen von Dr. Alfred Philippson. Size 9 × 6, pp. 16. *Presented by the Author.*

A catalogue of the geographical photographs taken by Dr. Philippson in Greece, copies of which he is desirous of exchanging for other photographs of geographical or geological interest.

Mediterranean—Cyprus. **Deschamps.**

Cosmos **12** (1894–96): 1–14, 90–94, 109–128, 184–211.

L'Isola di Cipro. Viaggi e studi di Emilio Deschamps. *With Illustrations.*

Norway—Lofoten Islands. *Alpine J.* **19** (1898): 135–148. **Priestman.**

Lofoten, 1898. By Howard Priestman. *With Illustration.*

Russia. *P.A. Nat. Sci. Philadelphia* (1897): 405–457. **Frazer.**

Geological Section from Moscow to Siberia and return. By Dr. Persifor Frazer.

Russia—Crimea. **Bogoslowsky.**

Quelques observations sur les sols de la Crimée. Par N. Bogoslowsky. [In Russian, *resumé* in French.] Size 9½ × 6½, pp. [12]. *Presented by the Author.*

Russia—Finland. ——

Observations météorologiques publiées par l'Institut Météorologique Central de la Société des Sciences de Finlande. Résumé des années 1881–1890. Kuopio: O. W. Backman, 1897. Size 15 × 10, pp. 28.

Russia—Finland. ——

Observations publiées par l'Institut Météorologique Central de la Société des Sciences de Finlande. Volume Quinzième. Première Livraison. Observations météorologiques faites à Helsingfors en 1896. Helsingfors, 1897. Size 14 × 10, pp. 122.

Sweden. ——

A Trip to Sweden, the Land of the Midnight Sun. By the Thule S.S. Co., Limited, Gothenburg, 1898. Size 5½ × 8, pp. 62. *Illustrations.*

Sweden. ——

The Swedish Touring Club's Guide to Sweden. With 15 Maps and 6 Plans. London: G. Philip & Son, 1898. Size 7 × 5, pp. xlii. and 244. *Price* 5*s.* *Presented by the Publishers.*

This Guide is interesting as the work of the Swedish Touring Club, edited by Dr. Gunnar Andersson and Dr. Mauritz Boheman, the routes written by Mr. Axel Ramm, and the whole translated by Mr. W. E. Harlock and printed in Stockholm. The work is well arranged, and the maps are clear and serviceable.

Switzerland—Zermatt. **Whymper.**

The Valley of Zermatt and the Matterhorn. A Guide, by Edward Whymper. Second Edition. London: John Murray, 1898. Size 7½ × 5, pp. xiv. and 224. *Maps and Illustrations. Price* 3*s.* *Presented by the Author.*

The new edition is brought up to the beginning of the present tourist season.

United Kingdom—England. *J. Scottish Meteorolog. S.* **11** (1898): 58–64. **Mossman.**

The Aurora Borealis in London from 1707 to 1895. By R. C. Mossman.

An addition to Mr. Mossman's study of the meteorology of London. The appearance of the aurora is most frequent in October and April, and least so in December and June.

United Kingdom—England. **Creighton.**

The Story of some English Shires. By the Right Honourable and Right Reverend Mandell Creighton, D.D., Lord Bishop of London. London: the Religious Tract Society, 1897. Size 12 × 9½, pp. 312. *Illustrations. Price* 35*s.*

A republication of a series of articles originally written for the *Leisure Hour*, and giving the author's impression of the distinctive characteristics of the following counties: Northumberland, Durham, Yorkshire, Cumberland, Westmoreland, Lancashire, Cheshire, Shropshire, Stafford, Derby, Worcester, Gloucester, Hereford, Warwick, Leicester, Northampton, and Huntingdon. The illustrations are woodcuts by Whymper.

United Kingdom—England. **Inglis.**

The 'Contour' Road Book of England (South-East Division). A Series of Elevation Plans of the Roads, with Measurements and Descriptive Letterpress. By

Harry R. G. Inglis. With 500 Diagrams and Maps. London: Gall and Inglis, 1898. Size 6½ × 4, pp. xx., [288], and 16. *Price* 2*s*. *Presented by the Publishers.*

This fresh instalment of an extremely practical road-book is, like the rest of the series, no mere literary or theoretical compilation, but is checked throughout by the actual experience of Mr. Inglis in cycling over the country.

United Kingdom—Gazetteer. **Cassell.**

Cassell's Gazetteer of Great Britain and Ireland; being a Complete Topographical Dictionary of the United Kingdom. With numerous Illustrations and Sixty Maps. [Vol. v.] Newchurch—Somersetshire. London: Cassell & Co., 1897. Size 10½ × 7½, pp. vi. and 472. *Presented by the Publishers.*

This valuable gazetteer maintains the excellence which has all along characterized the letterpress and illustrations. The map of Scotland in sections issued in the new volume is not of the same quality.

United Kingdom—Meteorology. *J. Scottish Meteorolog. S.* 11 (1898): 3–41*b*. **Buchan.**

The Mean Atmospheric Pressure and Temperature of the British Islands. By Dr. Buchan. *With Maps.*

This important paper will be specially noticed.

United Kingdom—Scotland. *J. School G.* 2 (1898): 161–170. **Herbertson.**

The Geography of Scotland (I.). By A. J. Herbertson.

On the Highlands of Scotland.

ASIA.

Asia Minor—Yezids. *Scottish G. Mag.* 14 (1898): 295–307. **Dingelstedt.**

The Yezids. By Victor Dingelstedt. *With Map.*

On the Yezid Kurds, with a map showing the distribution in Asia Minor of the several Kurdish tribes.

Central Asia. *Iz. Imp. Russ. G.S.* 34 (1898): 1–59. **Roborovsky.**

Roborovsky, V.I. Preliminary Report on the Expedition to Central Asia, 1893–95. [In Russian.]

China. ——

Prospectus of United States Commercial Commission to China. Under the direction of the Philadelphia Commercial Museum. Size 9½ × 6, pp. 12. *Presented by Gustave Niederlein.*

Plan of a proposed visit to China for the investigation of the actual commercial condition of that country, especially in connection with American trade.

China. *J.R. Colonial I.* 29 (1898): 487–491. **Wenyon.**

The Trade Routes of South China and their Relation to the Development of Hong Kong. By W. F. Wenyon. [Abstract.]

China—Manchuria. *Oesterreichische Monats. Orient.* 24 (1898): 49–53. ——

Die chinesische Ostbahn und ihr Gebiet.

The Eastern Railway of China is the official name of the Russian railway through Manchuria.

China—Sze-ch'uan. **Litton.**

Report of a Journey to North Sze-ch'uan. Foreign Office. No. 457, Miscellaneous. 1898. Size 10 × 6½, pp. 48. *Maps. Price* 8½*d*.

A notice of this important journey appears in the *Journal* for August, p. 187.

China—Suchou. *L'Esplorazione Com.* 13 (1898): 144–155. **Nocentini**

La Città di Succiu e la sua industria serica. Per L. Nocentini.

Chinese Empire. **Wellby.**

Through Unknown Tibet. By Captain M. S. Wellby. London: T. Fisher Unwin, 1898. Size 9½ × 6½, pp. xiv. and 440. *Portraits, Maps, and Illustrations. Price* 21*s*. *Presented by the Publisher.*

This handsome volume gives a plain straightforward narrative of the journey of Captain Wellby and Lieut. Malcolm across Tibet and Northern China, an account of the geographical results of which was communicated to the Society, and will appear in the *Journal*. This volume is well illustrated, and has a series of maps of the route on the large scale of 16 miles to an inch.

Chinese Turkestan. *Izvestiya Imp. Russ. G.S.* **34** (1898): 60–116. **Kozloff.**

Kozloff, P.K. Lob-Nor. [In Russian.] *With Maps.*

This has been noticed in the *Journal* for June, vol. xi. p. 652.

French Indo-China. *B. Union G. Nord de la France* **18** (1897): 193–223. **Lemire.**

Les Arts et les Cultes anciens et modernes en Annam-Tonkin. Par M. Ch. Lemire. *With Map and Illustrations.*

The map is a rough sketch of the ethnography of Indo-China.

French Indo-China—Cambodia. *Tour du Monde* **4** (1898): 289–300. **Agostini.**

Pnom-Penh (Voyage au Cambodge). Par M. J. Agostini. *With Illustrations.*

French Indo-China—Annam. *B.S.G. Com. Paris* **20** (1898): 170–188. **Paris.**

De la colonisation agricole en Annam. Par M. Camille Paris.

The author has lived for seventeen years as a colonist in Annam.

French Indo-China—Mekong. *B.S.G. Com. Paris* **20** (1898): 138–146. **Simon.**

De l'utilisation économique du Mékong de Janvier 1896 à Janvier 1898. Par M. le lieutenant G. Simon.

On the service of French Government steamers on the upper Mekong river.

India and Ceylon. *Imp. I.J.* **4** (1898): 174–175. **Ferguson and Davis-Allen.**

The projected Indo-Ceylon Railway, its strategic and commercial aspects and Imperial importance. By John Ferguson and J. Davis-Allen.

On a proposed railway by way of Adam's Bridge.

Indo-China. *C.Rd. S.G. Paris* (1898): 162–171. **Massieu.**

De l'Irrawaddi au Mékong supérieur. Par Mme. Massieu. *With Map and Illustrations.*

Notes of a solitary journey performed by Mme. Massieu up the Mekong and across into Burma, as an incident in a journey through and round Asia, which she crossed by the Siberian railway.

Japan. *Rev. Scientifique* **9** (1898): 720–722. **Vacher.**

Statistique du Japon. Par M. L. Vacher.

Japan—Formosa. **Pickering.**

Pioneering in Formosa. Recollections of Adventures among Mandarins, Wreckers, and Head-Hunting Savages. By W. A. Pickering, C.M.G. With an Appendix on British Policy and Interests in China and the Far East and Twenty-five Illustrations from Photographs and Sketches by the Author. London: Hurst & Blackett, 1898. Size 9½ × 6½, pp. xvi. and 284. *Portrait.* *Price* 16*s.* *Presented by the Publishers.*

Autobiographical reminiscences of the author's long career in China and Formosa, where he served in the Chinese Maritime Customs. Many striking adventures with the natives of Formosa are related, and the book forms a contribution to the history of European intercourse with the people of the Far East.

Malay Archipelago—Celebes. **Eerdmans and Erkelens.**

Het Landschap Gowa, door A. J. A. F. Eerdmans. En Geschiedenis van het Rijk Gowa, door B. Erkelens. Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen. Deel L. 3e Stuk. Batavia: Albrecht & Co., 1897. Size 11½ × 8, pp. 122. *Plate.*

Russia—Siberia. **Jochelsson.**

Is. E. Siberian Sect., Imp. Russian G.S. **29** (1898): 48–52.

W. Jochelsson. Vorläufiger Bericht über ethnographische Forschungen unter der Völkerschaften der Bezirke von Kolymsk und Werchojansk der Provinz Jakutsk. *With Map.*

Russia—Siberia. *B.S.G. Com. Paris* **20** (1898): 154–163. **Legras.**

La Sibérie économique en 1898. Par M. Jules Legras.

The author visited Siberia in 1896 and 1897, and on this basis considers the present economic condition of the country.

Turkey—Palestine. *P.R.I.* **15** (1898): 346–349. **Conder.**

Palestine Exploration. By Lieut.-Colonel C. R. Conder.

AFRICA.

Algeria. *C. Rd.* **126** (1898): 1589–1592. **Rolland.**

Régime du bassin artésien de l'Oued Rir' (Sud algérien) et moyens de mieux utiliser ses eaux d'irrigation. Note de M. Georges Rolland.

British Central Africa. *J.R. Colonial I.* **29** (1898): 467–486. **Gibbons.**
Marotseland and the Tribes of the Upper Zambezi. By Major A. St. H. Gibbons.

British West Africa—Benin. **Auchterlonie and Pinnock.**
T. Liverpool G.S. (1898): 5–16.
The City of Benin: the Country, Customs, and Inhabitants. By Messrs. T. B. Auchterlonie and James Pinnock.

Congo Free State. *Mouvement G.* **15** (1898): 175–186. **Wauters.**
La locomotive au Stanley-Pool. Le chemin de fer du Congo. Historique (1878–1898). Par A. J. Wauters. *With Maps, Portraits, etc.*
Account of the completion of the railway from Matadi to Stanley Pool, with a map of the route.

East Africa. *Globus* **73** (1898): 297–303. **Cavendish.**
Cavendishs Reise durch Ostafrika. *With Portrait, Maps, and Illustrations.*

East Africa—Somaliland. **Ghika.**
Prince Nicolas D. Ghika. Cinq Mois au Pays des Somalis. Genève et Bale, Georg & Co., 1898. Size 11 × 7¼, pp. vi. and 224. *Portraits, Map, and Illustrations. Price* 12*s.*
This will be noticed along with other books on Africa.

Egypt. *Sitz. k. P.A. W. Berlin* (1898): 291–303. **Borchardt.**
Bericht über die Corrosion des Sandsteinmaterials der Tempelbauten auf Philae. Von Dr. L. Borchardt. *With Plan and Illustrations.*
On the erosion wrought by desert sand, driven by the wind, on the temples at Philae.

Egypt. **Steevens.**
Egypt in 1898. By G. W. Steevens. London: W. Blackwood & Sons, 1898. Size 8 × 5¼, pp. x. and 284. *Illustrations. Price* 6*s. Presented by the Publishers.*
The diary of a recent visit to Egypt, including a journey up the Nile, written with a descriptive force quite unusual in books of holiday travel.

Egypt—Nile. *Globus* **73** (1898): 323–325. **Zimmermann.**
Das Staubecken des Nil bei Assuan. Von Dr. Albert Zimmermann. *With Map.*
On the irrigation reservoir now being established on the Nile at Assuan.

French West Africa. *B.S.G. de l'Est* (1897): 349–366. **Vermeersch.**
Historique de la mission Band-Vermeersch. *With Map.*
Full account of the Vermeersch expedition from Dahomey to the Niger.

German East Africa. *M. Deutsch. Schutzgeb.* **11** (1898): 171–172. **Johannes.**
Geographische Angaben aus Ostafrika. Von Hauptmann Johannes. *With Map.*

German East Africa. *Blackwood's Mag.* **163** (1898): 788–795. **Witt.**
An Experiment in Colonisation. By Robert C. Witt.
A fascinating description of Dar-es-Salaam. The author gives his opinions of the good and bad points of German colonisation.

German West Africa—Kamerun. **Stein and Geyger.**
M. Deutsch. Schutzgeb. **11** (1898): 168–170.
Aufnahmen des Premierlieutenants Freiherrn v. Stein zu Lausnitz und des Gouvernements-Sekretärs Geyger zwischen Kamerun und Sanaga (Lom).

German West Africa—Kamerun. *M. Deutsch. Schutzgeb.* **11** (1898): 162–167. **Stein.**
Die Anlage eines Weges zwischen Kamerun und Edea. Von Premierlieutenant Freiherrn v. Stein. *With Map.*

German West Africa—Togo. *M. Deutsch. Schutzgeb.* **11** (1898): 89–161. **Zech.**
Vermischte Notizen über Togo und das Togohinterland. Von Premierlieutenant Graf. v. Zech. *With Illustrations.*

Madagascar—Tamatave. *B.S.G. de l'Est* (1897): 367–396. **Courtet.**
Notes sur Tamatave. Par E. Courtet. *With Map and Plates.*

North Africa. **Bernard.**

Revue Bibliographique des travaux sur la géographie de l'Afrique Septentrionale. Par Augustin Bernard. Extrait du Bulletin de la Société de Géographie d'Alger. Alger: S. Léon, 1898. Size 10 × 6½, pp. 24. *Presented by the Author.*

A summary of the contributions to the literature concerning Morocco, Algeria, Tunis, and the Western Sahara during the year 1897.

South Africa. **Bertrand.**

Alfred Bertrand. Au Pays des Ba-Rotsi, Haut-Zambèze. Voyage d'exploration en Afrique et retour par les chutes Victoria, le Matébéléland, le Transvaal, Natal, le Cap. Paris: Hachette et Cie., 1898. Size 11½ × 8, pp. 332. *Portrait, Maps, and Illustrations. Presented by the Author.*

This will be referred to along with other recent books on Africa.

South-East Africa. *B.S. Neuchateloise G.* **10** (1898): 5-500. **Junod.**

Les Ba-Ronga. Étude ethnographique sur les indigènes de la Baie de Delagoa. Mœurs.—Droit Coutumier.—Vie nationale.—Industrie.—Traditions.—Superstitions et Religion. Par Henri A. Junod. *With Map and Illustrations.*

Tunis. **Johnston.**

A Journey through the Tunisian Sahara. By Sir Harry H. Johnston, K.C.B. From the *Geographical Journal* for June, 1898. Size 10 × 6½, pp. 28. *Map and Illustrations.*

Tunis—Bizerta. **[Ludwig Salvator.]**

Benzert. Prag: H. Mercy, 1897. Size 12½ × 9½, pp. xii. and 70. *Map and Illustration. Presented by H.I.H. The Archduke Ludwig-Salvator.*

A description of Bizerta, with a map and a number of full-page reproductions of the Archduke Ludwig Salvator's pen-and-ink drawings.

West Africa. *B.S.G. Com. Paris* **20** (1898): 147-153. **Vermeersch.**

Au Pays des Baribas. Par le Capitaine Vermeersch. *With Map.*

West Africa. *C. Rd. S.G. Paris*: (1898): 171-182. **Vermeersch.**

Au Gourma et au pays des Baribas. Par Capitaine L. Vermeersch. *With Map.*

West Africa. *T. Liverpool G.S.* (1898): 58-73. **Kingsley.**

West Africa, from an Ethnologist's Point of View. By Miss M. H. Kingsley.

NORTH AMERICA.

Alaska—Mount St. Elias. *Alpine J.* **19** (1898): 116-128. **Filippi.**

The Expedition of H.R.H. the Prince Louis of Savoy, Duke of the Abruzzi, to Mount St. Elias (Alaska). By Dr. Filippo de Filippi. *With Map and Illustrations.*

Alaska and Yukon. **Secretan.**

To Klondyke and Back. A Journey down the Yukon from its source to its mouth. By J. H. E. Secretan. With Hints to Intending Prospectors, and Twenty-four Illustrations. London: Hurst and Blackett, 1898. Size 8½ × 5½, pp. xii. and 260. *Price 6s. Presented by the Publisher.*

Although written with an effort to be humorous, there is no reason to doubt the substantial accuracy of the description of a journey from Victoria, B.C., to Juneau by sea, and thence over the Chilcoot pass and down the Yukon to Klondike, and returning down the Yukon to the sea.

Canada—Western Goldfields. *J.S. Arts* **46** (1898): 649-661. **Merritt.**

The Goldfields of British Columbia and the Klondike. By W. Hamilton Merritt.

Canada—Rocky Mountains. *Alpine J.* **19** (1898): 97-112. **Dixon.**

The Ascent of Mount Lefroy, and other Climbs in the Rocky Mountains. By Harold B. Dixon. *With Illustrations.*

United States. ———

Annual Reports of the War Department for the Fiscal Year ended June 30, 1897. Report of the Chief of Engineers. 6 Parts. Washington, 1897. Size 9½ × 6, pp. 4226. *Maps and Diagrams. Presented by the Engineer Department, U.S. Army.*

This comprehensive report contains the usual mass of exact information regarding the engineering works on rivers and harbours in all parts of the United States.

United States. **Gannett.**

Stanford's Compendium of Geography and Travel (New Issue), North America. Vol. ii. The United States. By Henry Gannett. London: E. Stanford, 1898. Size 8 × 5¼, pp. xvi. and 466. *Maps and Illustrations. Price* 15*s. Presented by the Publisher.*

This will be specially noticed.

United States—Florida. **Ladureau.**

A travers le Monde, Tour du Monde **4** (1898): 177–180.

La Floride. Par A. Ladureau. *With Illustrations.*

The author has resided for many years in Florida.

United States—Indiana. *J. Geology* **6** (1898): 257–272. **Veatch.**

Notes on the Ohio Valley in Southern Indiana. By Arthur C. Veatch. *With Maps and Sections.*

United States—Indian Territory. **Drake.**

P. American Philosoph. S. **36** (1897): 326–419.

A Geological Reconnaissance of the Coal Fields of the Indian Territory. By Noah Fields Drake. *With Maps and Illustrations.*

United States—Maryland. **Clark.**

Maryland Geological Survey. Volume One. Baltimore: The Johns Hopkins Press, 1897. Size 10½ × 7, pp. 540. *Maps, Diagrams, and Illustrations. Presented by the Survey.*

The Geological Survey of the State of Maryland was established in 1896 under the joint auspices of the State Government and the Johns Hopkins University, and under the executive charge of Prof. W. Bullock Clark. The volume just published includes an introductory notice of the organization and scope of the Survey, a historical sketch of the study of the natural features of Maryland, a complete report of the present state of knowledge concerning the geology and physical geography of the State, with bibliographies, and a Report on Magnetic work in Maryland, by L. A. Bauer. The book is finely illustrated, and makes a substantial addition to the most valuable division of geographical literature.

United States—Mississippi. *J. Geology* **6** (1898): 273–302. **Mabry.**

The Brown or Yellow Loam of North Mississippi, and its relation to the Northern Drift. By T. O. Mabry. *With Illustrations.*

CENTRAL AND SOUTH AMERICA.

Argentine and Chile—Boundary. **Hansen.**

The Argentino-Chilian Boundary Question. By F. P. Hansen. Liverpool: C. Tinling & Co., 1898. Size 10 × 6½, pp. 12. *Presented by the Author.*

A brief summary of the history and the present position of the boundary question in the Andes region between the Argentine Republic and Chile.

Brazil—Maranhão. *Rev. Trim. I.G. e Hist. Bahia* **4** (1897): 520–527. **Marques.**

O Padre A. Vieira. Noticias particulares em Maranhão. Pelo Dr. Cesar Augusto Marques.

Cuba. *National G. Mag.* **9** (1898): 193–242. **Hill.**

Cuba. By Robert T. Hill. *With Maps and Illustrations.*

A model geographical monograph, with regard to the solid basis of physical geography, history, and economic conditions. The illustrations include maps, diagrams, and carefully selected views.

Cuba—Bibliography. **Griffin and Phillips.**

Library of Congress. List of Books relating to Cuba (including references to collected works and periodicals), by A. P. C. Griffin, with Bibliography of Maps, by P. Lee Phillips. Washington: 1898. Size 9 × 6, pp. 62.

This useful catalogue of the literature relating to Cuba in the Library of Congress contains an alphabetical list of books, a chronological list of articles in magazines, etc., from 1829 onwards, and chronological lists of government documents and of maps.

French Guiana. *B.S.G. Com. Paris* **20** (1898): 161–169. **Levat.**

La Guyane et le Contesté franco-brésilien. Par M. Levat.

The author was in French Guiana for five months in 1897, studying the mineral resources of the colony. He considers the placer mining of great promise, provided

transport can be secured, and recommends the construction of a railway about 200 miles in length, from Cayenne to the contested area.

Peru—Yquitos. *T. Liverpool G.S.* (1898): 73–75. **Adamson.**

Yquitos, Communication from Mr. D. B. Adamson.

Venezuela. *Globus* **73** (1898): 303–309. **Sievers.**

Richard Ludwigs Reisen auf Paraguaná (Venezuela). Von W. Sievers.

Herr Ludwig travelled through the coast regions of Venezuela, and particularly the Paraguaná peninsula, for twelve years.

West Indies—Bird-Life. *National G. Mag.* **9** (1898): 243–247. **Chapman.**

The Origin of West India Bird-Life. By Frank M. Chapman.

The author has studied the birds of the West Indies for ten years.

AUSTRALASIA AND OCEANIC ISLANDS.

Australia. *P. American Philosoph. S.* **36** (1897): 466–478. **Mathews.**

Rock Carvings and Paintings of the Australian Aborigines. By R. H. Mathews. *With Plate.*

Australia—Great Barrier Reef. **Penck.**

Das grosse australische Wallriff. Vortrag, gehalten den 29 Jänuar 1896 von Prof. Dr. Albrecht Penck.—Vorträge des Vereines zur Verbreitung naturwissenschaftlicher Kenntnisse in Wien. XXXVI. Jahrgang.—Heft 13. Wien, 1896. Size 7½ × 5, pp. 24. *Presented by the Author.*

New Guinea. *A travers le Monde, Tour du Monde* **4** (1898): 193–196. ——

Villages Lacustres et Aériens en Nouvelle-Guinée. *With Illustrations.*

New South Wales. ——

Report of the Department of Public Works for the year ended 30th of June, 1896. Sydney, 1897. Size 13½ × 8½, pp. 96. *Map, Plans, and Plates. Presented by the Agent-General for New South Wales.*

Tasmania. *Papers & P.R.S. Tasmania*, 1897 (1898): 189–196. **Stephens.**

Land Routes for Exploration of the Western Country. By T. Stephens.

Tasmania. *Papers & P.R.S. Tasmania*, 1897 (1898): 142–175. **Walker.**

Notes on the Aborigines of Tasmania, extracted from the Manuscript Journals by George Washington Walker, with an Introduction by James B. Walker.

In 1832 Mr. Walker visited the Tasmanian Aborigines at Flinders island, and his description of the people is now published.

POLAR REGIONS.

Ballooning. **Volante.**

A^ro Volante. Strenna Polare, 1898. Invocazione ed auguri mondiali a favore di Andrée. Ossequiosamente dedicata alla O^ma Camera dei Deputati, Turino. Size 13 × 9, pp. xvi. *Presented by the Author.*

Circumpolar Currents. *B.G.S. Philadelphia* **2** (1898): 41–54. **Melville.**

A proposed System of Drift Casks to determine the Direction of the Circumpolar Currents and the Drift of the *Jeannette*. By Commodore Geo. W. Melville. *With Chart and Plate.*

This is noticed in the *Journal* for August, p. 194.

Norwegian Polar Expedition. **Nansen, Melville, Heilprin.**

P. American Philosoph. S. **36** (1897): 442–464.

Some Results of the Norwegian Polar Expedition, 1893–96. By Dr. Fridtjof Nansen. With remarks by Commodore George W. Melville and Prof. Angelo Heilprin.

Spitsbergen. *T. Liverpool G.S.* (1898): 41–58. **Gregory.**

Across Spitsbergen. By J. W. Gregory, D.Sc.

MATHEMATICAL GEOGRAPHY.

Map Projections. *Ann. Hydrographie* **26** (1898): 163–169. **Hammer.**

Näherungsweise Konstruktion der Mercator-Projektion. Von Prof. Dr. E. Hammer

Nautical Astronomy. *Nature* **58** (1898): 151–154. **Ruthven.**
Nautical Astronomy. By Captain J. F. Ruthven. *With Diagrams.*
On the methods employed for finding position at sea.

Photographic Surveying. *Ann. Hydrographie* **26** (1898): 169–172. **Matthieu.**
Die Sonnenhöhe als Argument zur Auffindung der richtigen Belichtungszeit bei photographischen Aufnahmen. Von Paul Matthieu. *With Plates.*

Terrestrial Latitude. *P. American Philosoph. S.* **36** (1897): 434–438. **Doolittle.**
The Variation of Terrestrial Latitude. By C. L. Doolittle.

PHYSICAL AND BIOLOGICAL GEOGRAPHY.

Geomorphology. **Lapparent.**
Leçons de Géographie Physique. Par Albert de Lapparent. Deuxième Édition. Paris: Masson et Cie, 1898. Size 10 × 7, pp. xvi. and 718. *Map and Illustrations. Presented by the Author.*
This is noticed in the Monthly Record for July, p. 83.

Oceanography. *Ymer* **18** (1898): 165–184 **Pettersson.**
Om Atlantiska oceanens inflytande på vårt vinterklimat och om orsaken till den senaste vinterns (1897–1898) blida väderlek. Af Otto Pettersson.
Prof. Pettersson contributed a summary of this paper to the *Journal* for June, vol. xi. p. 611.

Oceanography—Deposits. *Rev. Maritime* **137** (1898): 246–286. **Thoulet.**
Analyse lithologique de fonds marins provenant du golfe de Gascogne. Par M. J. Thoulet.

Oceanography—Red Sea. **Natterer.**
Chemische Untersuchungen in der nördlichen Hälfte des Rothen Meeres. Von Dr. Konrad Natterer. (Kaiserliche Akademie der Wissenschaften in Wien. Sitzung der mathematisch-naturwissenschaftlichen Classe vom 12 Mai 1898.) Size 9½ × 6½, pp. 8. *Presented by the Author.*

Seismology. *P.R.I.* **15** (1898): 326–336. **Milne.**
Recent Advances in Seismology. By Prof. John Milne, F.R.S.

Shore-Formations. **Cornish.**
On Sea Beaches and Sandbanks. By Vaughan Cornish, M.SC. From the *Geographical Journal* for May and June, 1898. Size 10 × 6½, pp. 40. *Maps and Illustrations.*

Terrestrial Magnetism. *American J. Sci.* **5** (1898): 455–462. **Bigelow.**
Comments on Bulletin No. 21. "Solar and Terrestrial Magnetism in their relations to Meteorology." By Frank H. Bigelow.
An abstract of the results of a recent official publication designed to investigate thoroughly the relations between magnetism and meteorology.

Terrestrial Magnetism. *Meteorolog. Z.* **15** (1898): 175–178. **Liznar.**
Die magnetische Aufnahme Oesterreich-Ungarns und das erdmagnetische Potential. Von Prof. J. Liznar.

Zoogeography—Marine Life. *Sitz. k. P.A.W. Berlin* (1898): 102–118. **Dahl.**
Die Verbreitung der Thiere auf hoher See. II. Von Prof. Friedr. Dahl. *With Map.*

Zoogeography—Whales. *Natural Science* **12** (1898): 397–414. **Southwell.**
On the Migration of the Right Whale (*Balæna mysticetus*). By Thomas Southwell. *With Maps.*

ANTHROPOGEOGRAPHY AND HISTORICAL GEOGRAPHY.

Colonization. *J.S. Arts* **46** (1898): 633–647. **Lyall.**
Colonies and Chartered Companies. By Sir Alfred C. Lyall, K.C.B., etc.

Commercial Geography. *J.R. United Service I.* **42** (1898): 507–539. **Winter.**
The Protection of Commerce during War. By Captain C. F. Winter. *With Maps.*

Commercial Geography—Indiarubber. *Mouvement G.* **15** (1898): 259–262. **Kerckhove.**

Le commerce du caoutchouc. Par G. Van den Kerckhove.

The annual export of indiarubber from the Congo Free State now amounts to about 1600 tons. The total production of the world for 1897 is estimated at 34,000 tons, of which 19,400 tons come from Para, 2400 from Central America, 10,500 from Africa, and 1700 from Asia. This does not take account of guttapercha.

Historical. *B.S.R. Belge G.* **22** (1898): 85–112. **Du Fief.**

Les découvertes maritimes des Portugais au XV^e^ siècle. Par J. Du Fief. *With Map.*

Historical—Al-Battani. *Cosmos* **12** (1894–96): 161–183. **Nallino.**

Le tabelle geografiche d'al-Battânî, tradotte ed annotate dal dott. prof. C. A. Nallino.

A translation of the tables of positions of 273 localities compiled by Al-Battani in the tenth century.

Historical—Alexander. *Sitz. k. P.A.W. Berlin* (1898): 120–134. **Köhler.**

Die Eroberung Asiens durch Alexander den Grossen und der Korinthische Bund. Von Ulrich Köhler.

Historical—Barents. *C.Rd. S.G. Paris* (1898): 157–162. **Cordier and Rabot.**

Centenaire de Barents. A la recherche d'un passage vers l'Asie par le Nord-Ouest et le Nord-Est. Par M. Henri Cordier.—Les trois voyages de W. Barents (1594–97). Par M. Ch. Rabot.

The Paris Geographical Society has commemorated by a special meeting the third centenary of the death of the great Dutch arctic explorer Barents, whose memorable voyage round the north end of Novaya Zemlya, his wintering there, and his great boat journey back to civilization form one of the finest pieces of arctic work ever performed.

Historical—Cabot. **Beazley.**

John and Sebastian Cabot. The Discovery of North America. By C. Raymond Beazley. (Builders of Greater Britain. Edited by H. F. Wilson, M.A.) London: T. Fisher Unwin, 1898. Size 8 × 5¼, pp. xx. and 312. *Portrait and Maps. Price 5s. Presented by the Publisher.*

This is a very careful study of the life and the voyages of the two Cabots with reference to the part they took in the discovery of the American continent, and to the search for the north-east passage. The old maps reputed to be the work of Sebastian Cabot are described and discussed, and two valuable bibliographical appendices are given, one detailing 53 documents bearing on the English life of the Cabots, the other with the titles of 113 books or memoirs relating to them.

Historical—Vasco da Gama. **Cordier, Védel, La Mazelière.**

C. Rd. S.G. Paris (1898): 189–203.

Centenaire de Vasco de Gama. Relations de l'Europe et de l'Asie avant et après le voyage de Vasco de Gama. Par M. Henri Cordier.—Voyage de Vasco de Gama. Par M. Emile Védel.—L'Inde à l'époque de Vasco de Gama. Par M. le Marquis de La Mazelière.

Historical—Vasco da Gama. **Delvaux.**

B.S.R. Belge G. **21** (1897): 301, 448, 600; **22** (1898): 30, 137.

Vasco de Gama et les découvertes maritimes des Portugais. Par Georges Delvaux.

BIOGRAPHY.

Gardner. **Pearse.**

Soldier and Traveller. Memoirs of Alexander Gardner, Colonel of Artillery in the service of Maharaja Ranjit Singh. Edited by Major Hugh Pearse. With an Introduction by the Right Hon. Sir Richard Temple, Bart, G.C.S.I. London: W. Blackwood & Sons, 1898. Size 9 × 6, pp. xxxiv. and 360. *Portraits and Map. Price 15s. Presented by the Publishers.*

A note on this remarkable book will be given.

Goulier. *B.S. Languedoc G.* **20** (1897): 355–362, 423–446. **Fulcrand.**

Le Colonel Goulier. Par le Colonel Fulcrand.

Colonel Goulier was born in 1818 and died in 1891. He was distinguished as a surveyor, and invented many instruments of precision.

Hüttner. *M. Ver. Erdk. Leipzig* (1897): 1–37. **Gedan.**

Johann Christian Hüttner. Ein Beitrag zur Geschichte der Geographie. Von Paul Gedan.

Hüttner, born 1766, died 1845, was secretary to Sir George Staunton on the staff of Macartney's embassy to China in 1793, and afterwards devoted most of his life to the translation into German of English books of travel.

Sigsbee. *National G. Mag.* **9** (1898): 250–252. **Gannett.**

Captain Charles D. Sigsbee, U.S.N. By Henry Gannett. *With Portrait.*

Captain Sigsbee is distinguished for his services to oceanography, rendered while acting for the Coast and Geodetic Survey.

GENERAL.

British Empire—Rainfall. **Hopkinson.**

Quarterly J.R. Meteorolog. S. **24** (1898): 148–161.

Monthly and Annual Rainfall in the British Empire, 1877–96. By John Hopkinson.

Rainfall statistics for different places in the British Empire, averaged for various periods of time, and combined in order to show certain relations for the British Empire as a whole, which can scarcely be viewed as a satisfactory unit for climatic considerations.

Education—Methods. **Reclus.**

Université Nouvelle de Bruxelles. Institut Géographique. Size 9 × 6, pp. 4.

This plan of geographical education is referred to in the *Journal* for July, p. 84.

Educational—Bibliography. *J. School G.* **2** (1898): 181–191. **Platt.**

The Better Books in School Geography. By Mary I. Platt.

Notes on books suited for teachers and pupils.

Educational—Methods. *J. School G.* **2** (1898): 170–181. **Davis.**

The Equipment of a Geographical Laboratory. By W. M. Davis.

This will be specially noticed.

Educational—Pictures. **Dubois and Guy.**

Album Géographique. Par MM. Marcel Dubois et Camille Guy. Tome II. Les régions tropicales. Paris: A. Colin & Cie., 1897. Size 11½ × 9, pp. xx. and 244. *Illustrations.*

Italians Abroad. ———

Bollettino del Ministero degli Affari Esteri, Aprile, 1898. Parte Generale. Le Società Italiane all'estero. Roma: Libreria Bocca, 1898. Size 9½ × 6½, pp. 110.

On the number of Italians living out of Italy, with statistics.

Medical Advice. **Crosse.**

Short Medical Notes for Explorers. W. H. Crosse. [For Private Circulation.] London: E. T. Heron & Co. Size 7 × 5, pp. 36. *Presented by the Author.*

Portuguese Colonisation. ———

Quarto centenario do Descobrimiento da India. Vasco da Gama. Les Colonies Portugaises dans l'Afrique, l'Asie et l'Amérique. Les relations entre les Portugais et les Hollandais dans leurs colonies. Catalogue de Livres en vente chez Martinus Nijhoff à la Haye (Hollande) 1898. Size 10½ × 8, pp. 44.

Scenery and Literature. **Geikie.**

The Romanes Lecture, 1898. Types of Scenery and their Influence on Literature. By Sir Archibald Geikie, D.C.L., F.R.S. London: Macmillan & Co., 1898. Size 9 × 6, pp. 60. *Price* 2*s. Presented by the Publishers.*

This was noticed in the *Journal* for July, p. 68.

Smithsonian Institution. **Goode.**

The Smithsonian Institution, 1846–1896. The History of its First Half Century. Edited by George Brown Goode. Washington, 1897. Size 11½ × 8, pp. x. and 856. *Portraits. Presented by the Smithsonian Institution.*

An interesting record of the romantic circumstances attending the foundation of the Smithsonian Institution, and the vast results which have followed its establishment and administration.

NEW MAPS.

By J. COLES, *Map Curator*, R.G.S.

EUROPE.

England and Wales. **Johnston.**

Modern Map of England and Wales. Scale 1 : 443,520 or 7 stat. miles to an inch. W. & A. K. Johnston, Edinburgh and London. 4 sheets. *Price, mounted on cloth,* 14*s*. *Presented by the Publishers.*

This is a new and revised edition of Johnston's map of England and Wales, on the scale of 7 stat. miles to an inch. It shows all important roads, railways, rivers, canals, towns, villages, ancestral seats, lighthouses, and light-vessels, and an attempt has been made to indicate the relief of the country by hachuring. The map can be obtained mounted on rollers, folded in case, or in sheets unmounted.

England and Wales. **Bartholomew.**

New Reduced Ordnance Survey of England and Wales. Scale 1 : 126,720 or 2 stat. miles to an inch. Sheet 24, Oxfordshire. J. Bartholomew & Co., Edinburgh, 1898. *Price* 2*s*., *mounted on cloth. Presented by the Publishers.*

England and Wales. **Ordnance Survey.**

Publications issued since July 8, 1898.

1-inch—General Maps:—

ENGLAND AND WALES (revision):—21, 50, 53, 62, 67, 95, 215, 227, 231, 263, engraved in outline. 1*s*. each.

6-inch—County Maps:—

ENGLAND AND WALES (revision):—**Durham,** 3 S.E., 6 N.E., S.W., 7 N.W., 8 S.W., 12 N.W., S.W., S.E., 13 N.W., N.E., S.W., S.E., 14 N.W., S.W., S.E., 17 N.W., S.W., S.E., 18 N.W., N.E., S.W., S.E., 19 N.W., N.E., S.W., S.E., 20 N.W., S.W., S.E., 21 N.W., N.E., S.W., S.E., 22 S.E., 23 N.E., S.W., S.E., 24 N.W., N.E., S.W., S.E., 25 N.W., N.E., S.W., S.E., 26 N.W., N.E., S.W., S.E., 27 N.W., N.E., S.W., S.E., 28 N.W., N.E., S.W., S.E., 29 S.W., 30 S.E., 31 N.W., 32 N.W., N.E., 34 N.W., S.E., 35 N.W., N.E., S.W., S.E., 36 N.E., S.W., S.E., 41 S.W., 43 N.W., N.E., S.E., 44 N.W., N.E., 45 N.W., 48 N.E., S.W. **Essex,** 2 S.E., 3 S.W., S.E., 4 S.E., 6 N.W., S.W., 8 N.W., 10 N.W., 11 S.E., 14 N.W., 17 N.E., 20 S.E., 29 N.E., 37 S.W., 38 N.E., S.W., 39 N.W., 65 S.W., S.E., 73 S.W., 74 S.E., 79 N.W., 82 N.E., 83 S.E. **Hampshire,** 6 S.W., 13 N.W., 68 S.E. **Kent,** 3 S.W.,17 N.E., 9 N.E., 11 S.W., 28 S.W., 31 N.W., S.E., 42 N.E., 54 S.W., S.E., 60 N.E., S.W., 61 N.W., S.W., 63 S.E., 64 S.W. **Northumberland,** 59 N.E., S.W., S.E., 60 S.W., S.E., 62 N.W., 66 N.W., 67 N.E., 81 S.W., S.E., 88 N.E. **Sussex,** 11 S.W., 13 N.W., 21 S.W., 23 N.W., S.W., 24 S.E., 35 S.E., 36 N.W., S.E., 37 N.E., S.W., S.E. **Surrey,** 15 N.E., S.E., 28 S.W., 30 N.E., 32 S.W., 36 S.W., 39 S.E., 40 S.E., 46 N.W., N.E.

25-inch—Parish Maps (revision):—

ENGLAND AND WALES:—**Cheshire,** VIII. 11, 16; IX. 5, 16; X. 8, 13; XVII. 2, 8, 10, 11, 12; XVIII. 2, 5; XIX. 2; XX. 1; XXVI. 15; XXVII. 13; XXXIV. 3, 7, 11, 14, 15, 16; XL. 4, 10, 14, 16; XLI. 2, 3, 6, 7, 10, 15, 16; XLII. 5; XLVII. 8, 15; XLVIII. 2, 3, 5, 9, 10, 13, 14; L. 8; LIV. 6, 8, 10; LV. 3, 5, 7, 9, 10, 11, 13; LVI. 9, 15; LXI. 6, 7, 8, 15; LXII. 10, 11, 12, 14, 15, 16; LXV. 4; LXVI. 2, 6. **Derby,** II. 16; III. 13; VII. 12; IX. 13; X. 5, 12; XI. 7, 8, 11, 16; XII. 4, 6, 7, 8, 13, 14, 15; XIII. 1, 5, 9, 10; XV. 1, 2, 4, 6, 7, 8, 9, 10, 11, 12; XVI. 6, 9, 13, 14, 15, 16; XVII. 3, 4, 5, 8, 12; XVIII. 2, 3, 5, 6, 8, 9. **Hampshire,** LXXVIII. 13, 16; LXXIX. 13; LXXXIII. 16; LXXXIV. 9; LXXXV. 4; LXXXVII. 1, 4, 5, 9, 13; XCVI. 14; XCVII. 7, 13; XCVIII. 8, 11, 12; XCIX. 1, 2, 9, 13; C. 1, 2, 3. **Hertfordshire,** I. 16; IV. 1, 5, 9; V. 10, 11; VI. 7, 10, 11, 12, 14, 15; VII. 1, 3, 5, 6, 11, 13; VIII. 2; IX. 11, 12; XI. 2, 3, 4, 8, 14, 15; XII. 3, 6, 13, 15; XIV. 13; XVIII. 16; XIX. 2, 13; XX. 3, 4, 5, 15, 16; XXI. 4, 5, 14, 16; XXII. 14, 15; XXVI. 4, 7, 8, 12; XXVII. 1, 8, 12, 14, 15; XXVIII. 12, 13, 16; XXIX. 2; XXX. 2, 3, 10; XXXI. 5; XXXIII. 1, 2, 6, 8, 16; XXXIV. 12; XXXV. 1, 4, 5, 13; XXXVI. 15; XXXVIII. 3, 4, 7; XXXIX. 5, 9, 13; XL. 4; XLIV. 1, 2, 5, 9, 13, 14. **Kent,** XIII. 1, 5, 9, 10, 13, 15; XV. 7; XIX. 7; XXI. 1, 5, 6, 13; XXV. 8, 10, 16; XXVI. 1; XXXVII. 1, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14; XXXVIII. 5; XLVI. 4, 8; XLVIII. 1, 2, 4, 5, 6, 9, 11, 14, 15; LVIII. 2, 6; LVIIIA. 1; LXVII. 12; LXX. 1, 3, 5, 7, 9; LXXI. 1, 4, 6, 7, 11, 12, 13, 14, 15; LXXIV. 1, 2, 3, 4, 5, 6, 12; LXXV. 3, 5; LXXX. 2, 5, 6; LXXXI. 3, 5; LXXXII. 5. **Northumberland,** XIII. 1, 6, 9, 10, 13, 14; XVIII. 2, 3. **Surrey,** VI. 15, 16; VII. 1, 2, 6, 10, 14, 15; XIV. 1, 3, 5, 7, 11, 13, 14; XXXVII. 10. **Sussex,** XX. 4; LX.

2, 10, 14; LXV. 5, 12; LXXII. 2, 6; LXVI. 5. **Westmoreland, XII.** 12, 14, 15; XIII. 3, 7, 9, 11, 12, 14, 15, 16; XVIII. 12; XIX. 3, 4, 7, 9, 13; XX. 3, 4; XXV. 3, 4, 6, 7, 11, 12 and 16; XXVI. 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 14, 15, 16; XXVII. 1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14; XXVIII. 5, 6, 7, 8, 9, 10, 11, 12; XXX. 3 and 4; XXXII. 3, 2 and 6, 4, 7, 8, 12, 15, 16; XXXIII. 1, 2, 5, 6, 9; XXXIV. 1, 5, 12, 16; XXXVII. 2 and 6, 3, 4, 7, 8, 10 and 11, 12, 14 and 15, 16; XXXVIII. 1, 2, 5, 8; XXXIX. 12, 16; XL. 9; XLI. 2 and 6; XLV. 4, 8; XLVI. 5. *Price* 3*s.* each.

Miscellaneous:—One-inch Parish Indexes, printed in colours, showing 25-inch parish maps only: Sheets 283, 284, 285, 286, 287, 288, 299, 300, 303, 304, 306, 321, 331, 344, 345. *Price* 1*s. each.* These are also published showing 6-inch quarter-sheets only. *Price* 1*s. each.*

(*E. Stanford, Agent.*)

Scotland. **Johnston.**

W. & A. K. Johnston's "Three Miles to the Inch" Map of Scotland. Scale 1:190,080 or 3 stat. miles to an inch. W. & A. K. Johnston, Edinburgh and London, 1898. *Price* 1*s. each sheet.* 16 sheets. *Presented by the Publishers.*

The scale upon which this map is drawn is sufficiently large to admit of a very fair amount of detail being shown without overcrowding, and it will, therefore, be found useful to tourists and others. The map is, of course, based upon the Ordnance Survey, but it has been revised by persons acquainted with the various districts in order to ensure the greatest possible accuracy. The names of hills and glens, contours for every 500 feet, heights above sea-level, and main roads, are shown in brown; names of towns and villages, smaller roads and railways, in black; all water in blue, and the principal forests by green. The counties are distinguished by different colours in the usual manner.

ASIA.

Japan. **Launay.**

Carte des Missions Catholiques au Japon. Par Adrién Launay de la Société des Missions Etrangères. Scale 1:2,200,000 or 34·2 stat. miles to an inch. Dessiné et gravé par R. Hausermann, Paris, 1898. Supplément au *Journal les Missions Catholiques*, 22 Avril 1898.

AMERICA.

British North-West America. **Surveyor-General's Office.**

Canadian Government Surveys: Yukon Map. Scale 1:380,160 or 6 stat. miles to an inch. Sheet 1. Surveyor-General's Office, Ottawa, 1898. *Price* 25 *cents. Presented by the Surveyor-General of Canada.*

The present sheet of the Yukon Map of the Canadian Government Survey Department is important, as, in addition to showing the glaciers in the neighbourhood of Mount Fairweather, and the coast-line from Dixon harbour to a few miles north of Cape Fairweather, it contains plans, on the scale of 1·26 stat. miles to an inch, of the Chilkoot and White passes, and the Bonanza and Eldorado creeks, and another of the town of Dawson, on the scale of 580 feet to an inch. All of these are from the most recent surveys; but, with regard to the plan of the Chilkoot and White passes, it is stated that the mapping of the country to the north of the summits can only be considered approximate. In the south-east corner, there is an inset of Alaska and British Columbia, which serves as an index to the whole map.

GENERAL.

Facsimile Maps. **Miller.**

Mappaemundi, Die ältesten Weltkarten. Herausgegeben und erläutert von Dr. Konrad Miller, Prof. am K. Realgymnasium in Stuttgart. VI. (Schlussheft.) Rekonstruierte Karten. Ueber die Rekonstruktion der alten Weltkarten, Taf. 1; Die Weltkarte des Ravennaten, 7 Jahrh. Taf. 2; Die Weltkarte des Isidor von Sevilla, 7 Jahrh. Taf. 3; Die Weltkarte des Orosius, Anf. 5 Jahrh. Taf. 4; Sphæra Julii Honorii, 4 Jahrh.; Die Fragmente des Orbis Romanus von Ammianus Marcellinus, 4 Jahrh. Taf. 5; Das 1. Segment der Castoriuskarte, 4 Jahrh. Taf. 6; Der Pinax Dionysii, 2 Jahrh. n. Chr. 7; Die Weltkarte des Pomponius Mela, 1 Jahrh. n. Chr.; Die Karten zu Dimensuratio und Tacitus u. a. Taf. 8; (1 and 2) Die Erdbilder des Eratosthenes und Strabo, Hipparch, Polyb. und Artemidor, Taf.

8: (3) Die Klimatenkarte des Plinius u. a. Anhang; Die Mosaikkarte von Madaba, 6 Jahrh. Stuttgart: Jos. Roth'sche Verlagshandlung, 1898. *Price* 10 *marks.*

The issue of this part completes Dr. Konrad Miller's very interesting and useful series of facsimiles and reconstructions of the oldest maps of the world, the publication of which was commenced three years ago. The work of reproduction has been, generally speaking, very creditably performed, and the letterpress which accompanies the maps adds considerably to their value. Students of historical geography have to thank Dr. Miller and the publishers for placing within their reach, at a reasonable price, facsimiles of some of the most interesting early maps of the world.

The World. **Vivien de Saint Martin and Schrader.**

Atlas Universel de Géographie. Ouvrage commencé par M. Vivien de Saint Martin et continué par Fr. Schrader. Paris: Librarie Hachette et Cie. Sheet 6. Europe Physique. *Price* 2 *fr.*

Sheet 6 of this atlas consists of a carefully and artistically executed physical map of Europe, showing heights of land and depths of water by a system of contours and colouring. It is accompanied by explanatory letterpress.

The World. **Andree.**

Andrees allgemeiner Handatlas, 126 Haupt- und 130 Nebenkarten auf 186 Kartenseiten, nebst alphabetischem Namenverzeichnis. Vierte, völlig neubearbeitete, stark vermehrte Auflage, herausgegeben von A. Scobel. Bielefeld und Leipzig: Verlag von Velhagen & Klasing, 1898.—Lief 21, Elsass-Lothringen, Baden, Württemberg und Rheinpfalz: Schottland.—Lief 22, Rheinland und Westfalen, Fürstentum Lippe und Gross-Herzogtum Luxemburg: Irland, Dänemark.—Lief 23, Untere Donauländer und Türkei, Westliche Hälfte: Südöstaustralien: Neuseeland und Tasmanien.

The World. **Bartholomew.**

The Citizen's Atlas. One hundred maps and gazetteer. By J. G. Bartholomew, F.R.G.S. Published by George Newnes, Ltd., London. To be completed in 20 parts, issued fortnightly. Part 11. *Price* 6*d.*

CHARTS.

Admiralty Charts. **Hydrographic Department, Admiralty.**

Charts and Plans published by the Hydrographic Department, Admiralty, during May and June, 1898. *Presented by the Hydrographic Department, Admiralty.*

No.	Inches.	
2584 m =	3·0	Orkney islands:—Approaches to Kirkwall. 2*s.* 6*d.*
1662 m =	1·2	Norway, west coast:—Skudesnæs fiord and approach to Stavanger. 2*s.* 6*d.*
2965 m =	{0·35 / 0·75}	Arctic Russia, river Yenisei, Cape Sopochnaya, Karga to Yakovleva Kosa. Dickson harbour and approaches. 1*s.* 6*d.*
2962 m =	2·0	Arctic Ocean:—The North cape to Einsamkeit island, including the Barents and Kara seas (plan, Yugorski strait). 2*s.* 6*d.*
2964 m =	0·23	Arctic Russia:—Head of the gulf of Ob. 1*s.* 6*d.*
2980 m =	0·27	Iceland, south coast:—Storksnæs to Portland. 2*s.* 6*d.*
2979 m =	0·28	Iceland, east coast:—Niardvig to Storksnæs. 1*s.* 6*d.*
2978 m =	0·28	Iceland, north coast:—Sigle fiord to Niardvig. 2*s.* 6*d.*
2977 m =	0·28	Iceland, north coast:—North cape to Sigle fiord, etc. 2*s.* 6*d.*
1550 m =	1·8	Iceland, east coast:—Reydar and Faskrud fiords. 2*s.* 6*d.*
2976 m =	0·3	Iceland, west coast:—Snefells Jökel to North cape. 2*s.* 6*d.*
3000 m =	3·7	Iceland, north-west coast:—Hesteyre fiord. 1*s.* 6*d.*
1636 m =	var.	Iceland, east coast:—Beru fiord, Djupavog, Heimaey trading station. 2*s.* 0*d.*
2998 m =	{1·5 / 6·0}	Iceland, north-west coast:—Dyra fiord, Haukadalr, Thingeyre. 1*s.* 6*d.*
2999 m =	{2·7 / 7·4}	Plans on the north-west coast of Iceland:—Patrix fiord, Svendseyre. 1*s.* 6*d.*
3001 m =	var.	Plans on the north coast of Iceland:—Sigle fiord, Akureyre, Skagestrands hartour. 1*s.* 6*d.*
2004 m =	6·0	Plans on the east coast of Iceland:—Vapna fiord trading station. 1*s.*
2997 m =	var.	Plans on the north-west coast of Iceland:—Muslingen channel, Skutils fiord and Pollen harbour, Flateyre anchorage, Bildal anchorage. 1*s.* 6*d.*
1220 m =	0·07	Africa, west coast:—Garnet head to Cape Verde (plans, Ouro river, Arguin bay, Portendick anchorage). 3*s.*

1355 m = 0·08 Malacca strait with part of the east coast of the Malay peninsula. 2s. 6d.
1430 m = 2·6 Russian Tartary:—Slavianski bay. 1s. 6d.
1529 m = 0·25 Banks between Rotumah and Samoa islands:—Robbie bank, Pasco bank, Tuscarora bank and Adolph knoll, Waterwitch bank, Lalla Rookh bank and Home knoll, Field and Faviuni banks. 1s. 6d.
170 Cefalù to Mazzara:—Plan added, Termini Imerese.
1455 Anchorages on the west coast of Greece:—Plan added, Butrinto bay.
2232 Odessa to Sevastopol:—Plan added, Akmechet harbour.
2230 Bosporus to Cape Kaliakra:—Plan added, Inada road.
2216 Turkish ports on the south shore of the Black sea:—Plan added, Koslu bay.

(*J. D. Potter, Agent.*)

Charts Cancelled.

No.		Cancelled by	No.
2584	Approaches to Kirkwall.	New Chart. Approaches to Kirkwall	2584
2292	Akmechet harbour.	New Plan. Akmechet harbour on chart	2232
2204	Inada road.	New Plan. Inada road on chart	2230
2294	Koslu bay.	New Plan. Koslu bay on chart	2216
2282	Plan of Yugorski strait on this sheet.	New Plan. Yugorski strait on chart	2962
1230	Cape Bojador to Cape Blanco.	New Chart. Garnet head to Cape Verde	1230
1231	Cape Blanco to Cape Verde.		
605	The river Ouro.		
1430	Slavianski bay.	New Chart. Slavianski bay	1430
1431	Plan of Waterwitch bank on this sheet.	New Chart. Banks between Rotumah and Samoa islands	1529

Charts that have received Important Corrections.

No. D, Index chart:—North, Baltic, and White seas; Iceland. 2810, Ireland, east coast:—Lough Carlingford entrance. 2800, Ireland, east coast:—Lough Carlingford, Newry river. 2270, White sea:—Mount Sozonova to Kouzminskia hills, etc. 2278, White sea. 2274, White sea:—Kammenoi point and Unskaia inlet to Tolstik and Chesminskoi points. 2277, White sea:—Sharapov head to Ludoshnoi point. 2280, White sea, Arkhangel bay, etc. 2061, White sea:—Approaches to Kem. 2275, White sea:—Gulf of Onega. 1770, Gulf of Riga:—Port of Libau. 304, France, west coast:—Port Louis and Lorient. 234, Egypt:—Port Said. 867, Bermuda:—The Narrows to Hamilton. 1690, Newfoundland:—Hawke bay to Ste. Geneviève bay, etc. 284, Newfoundland:—Cow head harbour to Ste. Geneviève bay, etc. 2918, Newfoundland:—Port Saunders and Keppel and Hawke harbours. 332, Lake Erie. 1731, Lake Huron:—Parry sound and approaches. 2854, Harbours in the Gulf of Mexico. 530, South America, east coast:—Victoria to Santa Catharina. 1331, South America, east coast:—Port Belgrano (Bahia Blanca), etc. 461, Africa, west coast:—Wari and Benin rivers and creeks. 1862, Africa, west coast:—Lekki to river Dodo. 1357, Africa, west coast:—River Benin to river Cameroon, etc. 1361, Africa, west coast:—Fernando Po to Cape Lopez. 627, Africa, west coast:—St. Paul de Loanda to Great Fish bay. 40, India, west coast:—Karáchi harbour. 2637, Strait of Makassar, south part. 1269, Cochin China:—Saigon river, etc. 2695, Yang tse Kiang:—Tung liu to Hankau. 2809, Yang tse Kiang:—Shanghai to Nanking. 2678, Yang tse Kiang:—Nanking to Tung liu. 1236, China:—Approaches to Port Arthur, etc. 83, Japan:—Channels between Misima Nada and Iyo Nada. 379, Fiji islands:—Vatu Ira channel with adjacent coasts. 1112, Pacific ocean:—Manga Reva or Gambier islands.

(*J. D. Potter, Agent.*)

United States Charts. **U.S. Hydrographic Office.**

Pilot Charts of the North Atlantic and North Pacific Oceans for July, 1898. Published at the Hydrographic Office, Washington, E.C. *Presented by the U.S. Hydrographic Office.*

PHOTOGRAPHS.

Chile and West Coast of Central and South America. **Leblanc.**

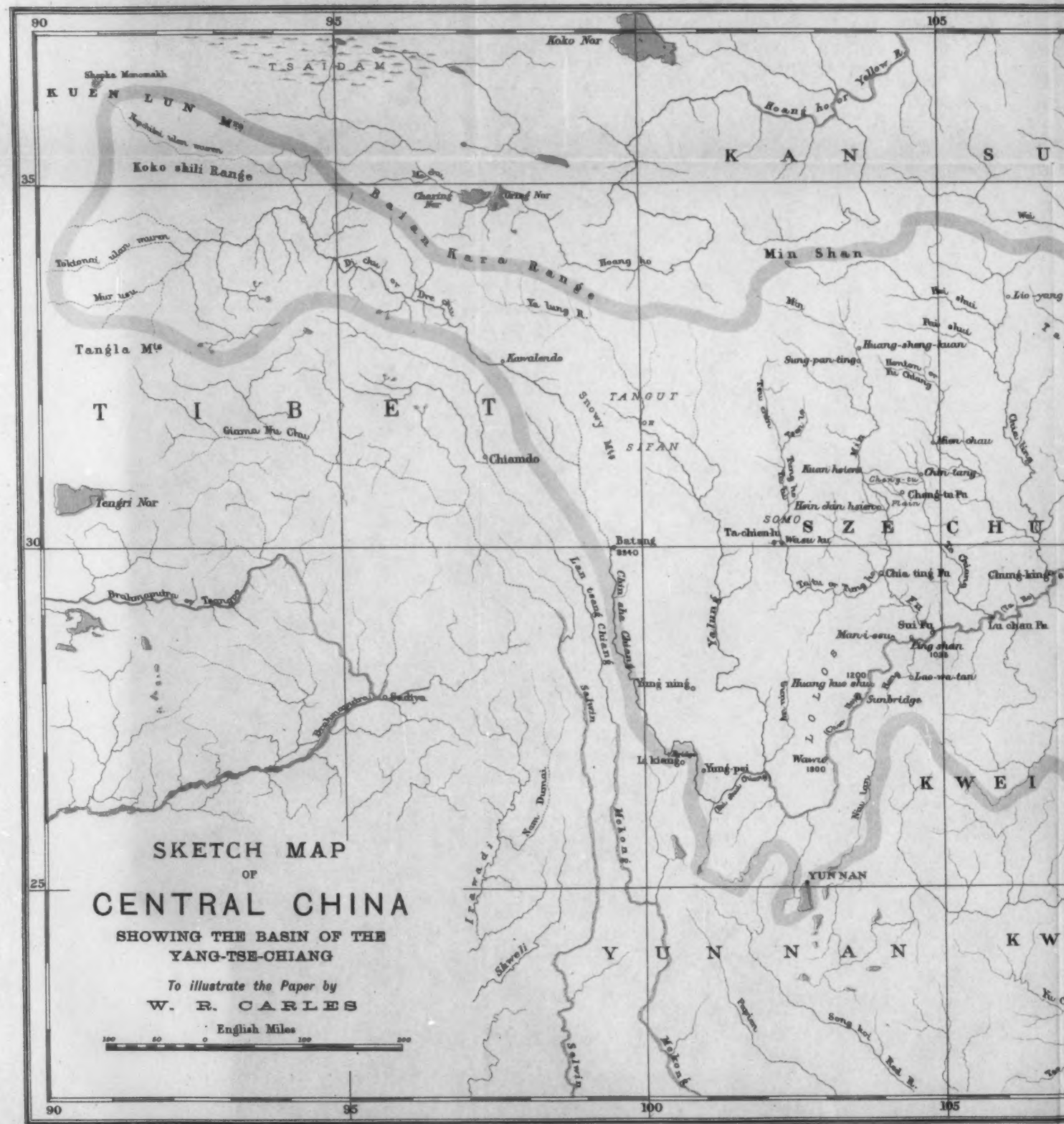
One hundred and fifty-six Photographs and photogravures of Chile and West Coast of Central and South America, taken by F. Leblanc, of Santiago de Chile. *Presented by Lieut. T. Dannreuther, R.N.*

With a few exceptions, this series consists of views of scenery, cities and towns, inhabitants, etc., of Chile; the remainder being of Colon, Panama, Guayaquil, Payta, and Trujillo. One hundred and forty-four are photogravures, and both these and the photographs are, for the most part, very excellent productions. The following is a list of the subjects:—

Photographs.—(1) Venta de Mote; (2) Choza, Araucana; (3) Oda del Salto; (4) Mote Moli . . . do; (5) Cájon de la Rio Colorado camino San Jose de Maipo; (6) Valle de los Horcones, Aconcagua (Cerro); (7) Rio Colorado en et Paramillo de las Vacas.

Photogravures.—Santiago No. 1: Laguna, Quinta Normal; Monumento de la Compañia; Teatro Municipal; Cerro Santa Lucia; Portal Mac-Clure; Estacion Central de Los Ferrocarriles; Plaza de Armas y Calle de Ahumada; Palacio Edwards Calle Catedral; Alameda; Entrada Parque Cousiño; Parque Cousiño; Observatorio Astronomico. Santiago No. 2: Plaza de Armas; Laguna del Parque Cousiño: Calle Moneda; Monumento de O'Higgins; Casa de Moneda; Alameda; Pasaje Matte; Chalet del Parque Cousiño; Calle Huerfanos; Cerro Santa Lucia; Puente de Cal I Canto; Vista Jeneral de Santiago. Santiago No. 3: Correo, Intendencia y Municipalidad; Congreso Nacional; Portal Mac-Clure; Galeria San Carlos; Univeraidad; Calle del Estado; Parque Cousiño: Quinta Normal; Cerro Santa Lucia; Casa Cousiño; Chalet, Parque Cousiño; Cementerio Jeneral. Valparaiso No. 1: Cruz de Reyes; El Puerto; Avenida Errazuriz; Plaza Intendencia, Monumento Prat; Calle de Blanco; Muelle y Almacenes Fiscales; Calle de Condell; Entrada al Parque Municipal; Iglesia Protestante; Muelle Fiscal; Cementerio; Puerto de Valparaiso. Valparaiso No. 2: Monumento Prat; Correo; Llegada de Vapores; Estacion Bella Vista; Teatro de la Victoria; Vestibulo del Teatro Victoria; Bahia y Almacenes Fiscales; Parque Municipal; Puerto y Muelle Fiscal; Interior del St. Paul's Church, Iglesia Protestante; Plaza del Orden; Vista del Malecon. Valparaiso No. 3: Puerto; Vista del Malecon: Calle de Blanco; Temporal en Valparaiso; Calle de Esmeralda; Parque Municipal; Palacio Edwards; Muelle Fiscal; Edificio Cousiño y Avenida Errázuriz; El Malecon y Avenida Errázuriz; Plaza Echaurren; Cerca de Valparaiso; Viaje de Panama a Valparaiso. Colon; Panama Guayaquil; Guayaquil; Payta; Calle de Payta; Payta, Trujillos; Darsena. Callao; Callao; El Palacio, Lima; Catedral de Lima; Pisco; Pisco; Mollendo; Morro de Arica; Arica; Plaza de Iquique; Iquique; Coquimbo; Valparaiso—Tipos y Costumbres del Pais. Flores Chilenas; Paperos-Mercado Central; Panadero de Valparaiso; Rancho; Casa de Campo; Lechero; Motera; Cosecha de Trigo; Rancho; Araucana; Araucano; Araucanos—Estrecho de Magallanes. Entrada al Estrecho de Magallanes; Buckland's Mountain; Salto al Pie de Buckland Mountains; English Narrow Smith's Channels; Latitude Cove, Estrecho de Magallanes; H.M.S. *Alert* in Swallow Bay, Smith's Channel; Tilli Bay, Smith's Channel; Borgia Bay, Smith's Channel; Toldo de Patagones; Toldo de Fueguinos; Fueguinos; Toldo de Patagones. Paso de Uspallata. Confluencia del Rio Blanco i del Jungal; Salto del Soldado; Laguna del Portillo; Vista Tomada desde la Casucha del Portillo; Posada del Inca; Puente del Inca; Camino del Puente del Inca a Punta de Vasca; Cajon del Rio de las Cuevas; Valle de la Tolorzia; Los Penitentes; Montes Corrales de Pava; Cumbre de la Cordillera, 3900 metros. Viña del Mar. Estacion de Vina del Mar; Vina del Mar; Parroquia de Vina del Mar; Entrada Principal del Hotel; Primer Patio del Hotel; Corredor del Hotel; Corredor del Hotel; Comedor del Hotel; Parque del Hotel; Parque del Hotel; La Cancha; Vista Jeneral.

N.B.—It would greatly add to the value of the collection of Photographs which has been established in the Map Room, if all the Fellows of the Society who have taken photographs during their travels, would forward copies of them to the Map Curator, by whom they will be acknowledged. Should the donor have purchased the photographs, it will be useful for reference if the name of the photographer and his address are given.



SKETCH MAP
OF
CENTRAL CHINA

SHOWING THE BASIN OF THE YANG-TSE-CHIANG

To illustrate the Paper by

W. R. CARLES

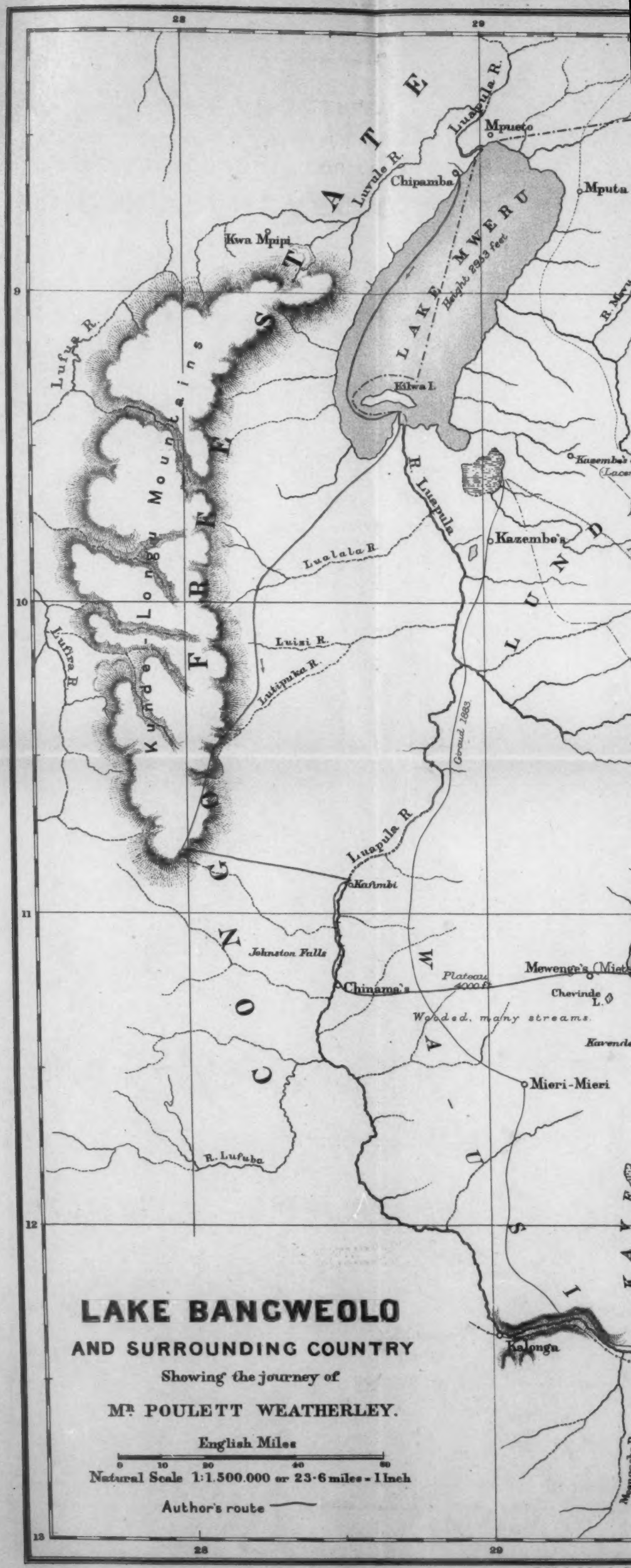
English Miles

100 50 0 100 200

Published by the Royal G

W. & A.K. Johnston, Edinburgh & London.

yal Geographical Society



LAKE BANGWEOLO

AND SURROUNDING COUNTRY

Showing the journey of

Mr POULETT WEATHERLEY.

English Miles

0 10 20 40 60

Natural Scale 1:1.500.000 or 23·6 miles = 1 Inch

Author's route

Published by the R

30 31

Itawa Murirola

L. TANGANYIKA

Mkula

Mputa

Great Mweru Swamp

Lofu R.

Hore B.

Rhodes B

Pt Abercorn

Mpimbwe

9

R. Mera

Moombadai R.

A T A W A

Kiet R.

Ulungu Hill

Lofu R.

Malunda R.

Zuongo R.

Livingstone

Pambeiro

L O B E M B A

10

Gomatho 1831

Lieba R.

W E N A R.

Giraud 1883

Lacerda 1798

N'zombo's

Chimbo I.

Chilipa I.

Inula I.

Luena

T U M B U A W E M B A

Garnitto 1831

Kalaso

Kisi I.

Kalaso I.

11

LAKE BANGWEOLO

Height 3675 feet

Karoma's

Yombwelo

Kasitu

KIRUI

Kapampa

Mbawala I.

Lupakuta

Chambeze R.

Punta Pt

K A F E N D E

Luapula R.

12

Old Chitambo

Kabende (Livingstone † 1873)

Thomson 1891

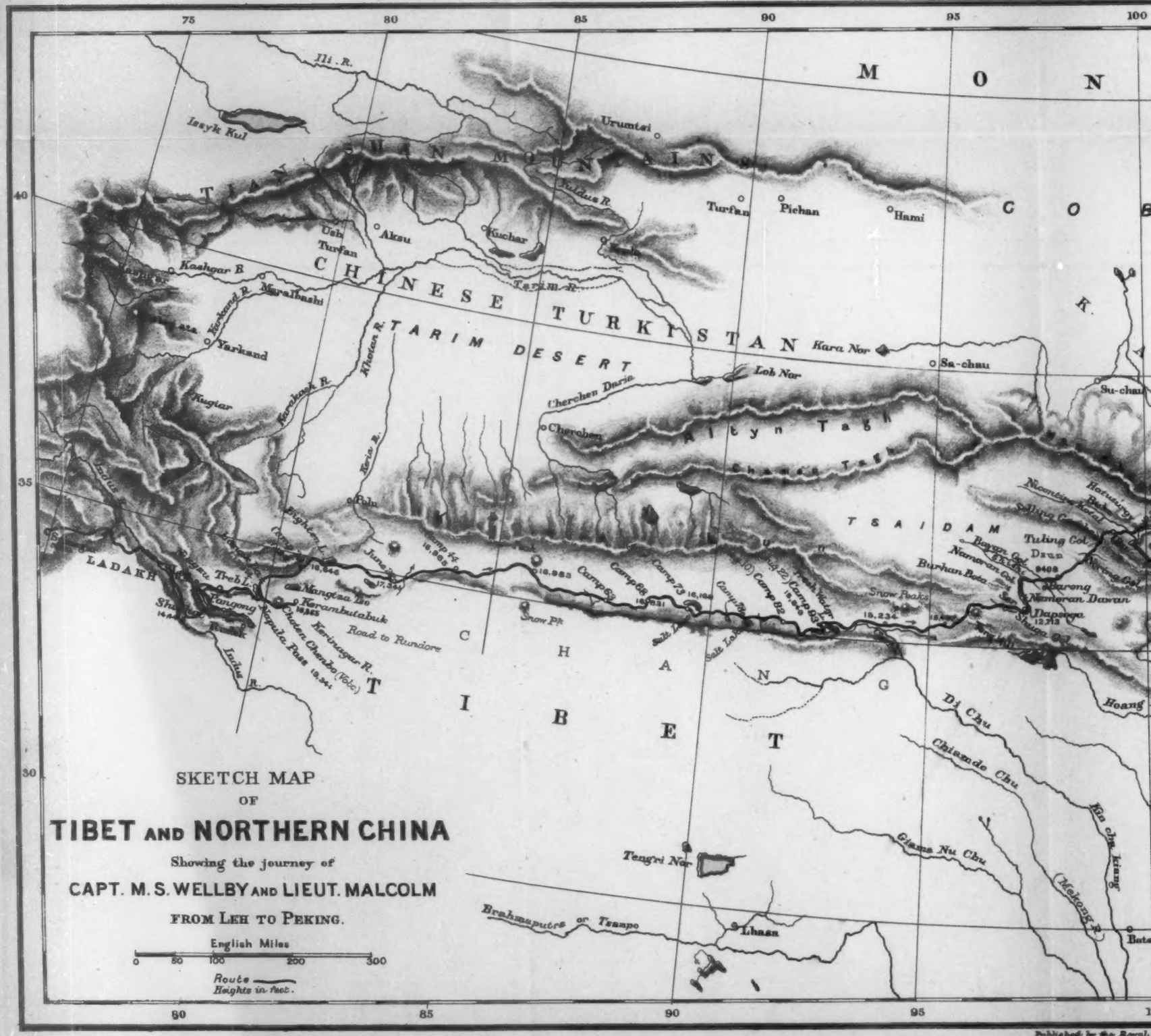
R. Molembo

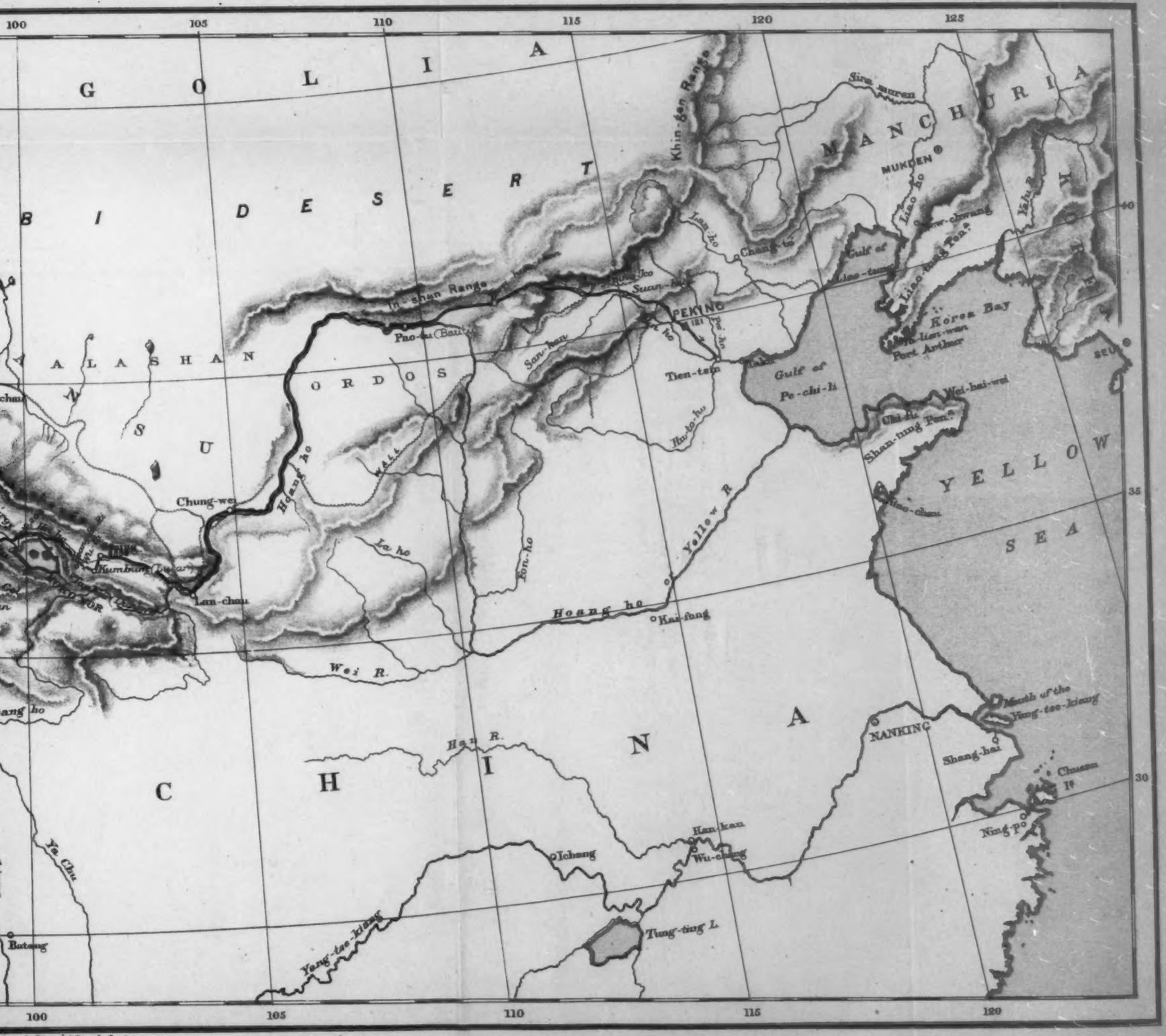
Msengasha R.

I L A L A

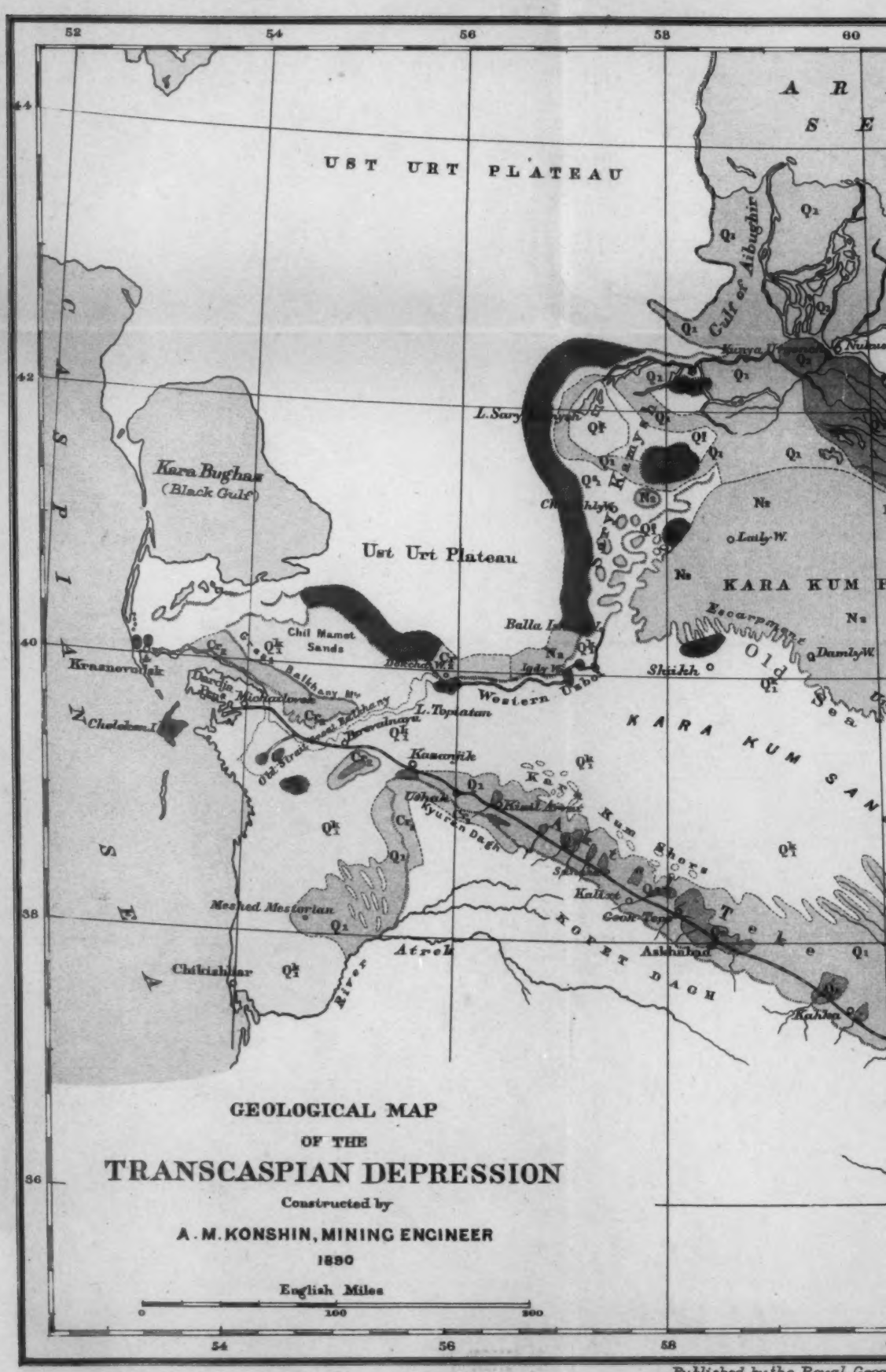
30 31 13

Royal Geographical Society

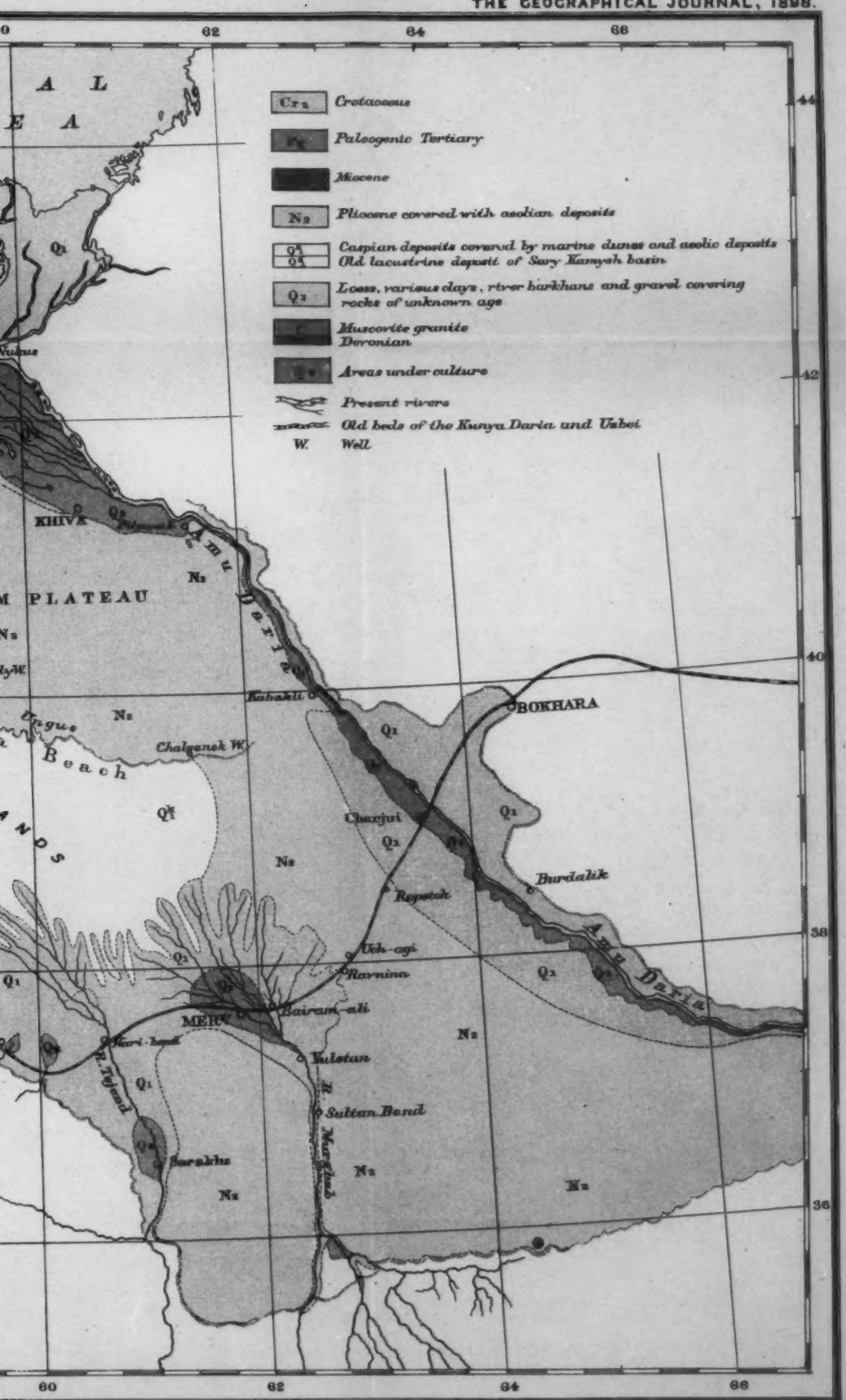

SKETCH MAP
OF
TIBET AND NORTHERN CHINA
Showing the journey of
CAPT. M. S. WELLBY AND LIEUT. MALCOLM
FROM LEH TO PEKING.
English Miles
0 50 100 200 300
Route
Heights in feet.
Ili R.
Issyk Kul
Urumtsi
TIAN SHAN MOUNTAINS
Turfan
Pichan
Hami
Aksu
Kuchar
Kashgar R.
Maralbashi
Yarkand R.
Yarkand
Kashgar
Kuglar
Karakash R.
Khotan R.
Keria R.
Polu
CHINESE TURKISTAN
TARIM DESERT
Tarim R.
Kara Nor
Lob Nor
Sa-chau
Cherchen Daria
Cherchen
Altyn Tagh
Chanda Tagh
TSAIDAM
Tuling Col
Burhan Bota
Snow Peaks
Dapsang
LADAKH
Mangtsa
Keramkutabuk
Changchenmo R.
Kerinagar R.
Road to Rundore
Snow Pk
Salt Lake
Camp 64
Camp 63
Camp 68
Camp 73
Camp 82
Camp 83
Camp 84
Camp 85
Camp 87
Fresh Water R.
Yangpung
Kepula Pass
Chiuen Chenbo (Yoke)
Indus R.
TIBET
Tengri Nor
Brahmaputra or Tsanpo
Lhasa
Dj Chu
Chiamde Chu
Giama Nu Chu
Kin cha kiang
(Mekong R.)
Hoang
MONGOLIA
Published by the Royal



Royal Geographical Society.



Published by the Royal Geog



Geographical Society.